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NATURAL THEOLOGY

BY

JOHN BASCOM

AUTHOR OF SCIENCE OF MIND, ETHICS, PHILOSOPHY OF RELIGION.

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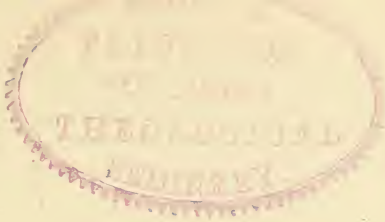

PREFACE.

THE field of knowledge is boundless. The human mind, in pursuing one portion of it, is not merely tempted to neglect other portions, but it is often led to pervert and to despise them. The ruling conceptions of the time are regarded as supreme principles, the prevalent methods as the only fitting methods of inquiry, while knowledge is narrowed down to suit the attainments of those who are pursuing it. Thus the word science in our time is interpreted by the results reached in researches among the simpler forms of physical forces. And any department of thought which, from its complexity and obscurity, does not admit of this succinct and exact statement, is disparaged as either incapable in itself, or incapable through the methods employed in it, of scientific discussion.

Without falling into the opposite error of undervaluing science, we must still insist that the larger and more interesting share of the questions which pertain to human life, above all to spiritual human life, are too comprehensive in the elements that enter into them, too full in the results that flow from

them, to admit that limited view which always accompanies exact conclusions. It is certainly a strange habit of thought, begotten of close observation in a restricted field, which inclines us to disparage a topic because so many and so subtile lines of connection cross each other in it, or to refuse to pursue it, till we have rudely cast away most of its peculiarities, and laid bare a few bones and a few tendons as the whole substance of its living self.

Natural Theology is an inquiry which must gather the premises and the illustrations of its arguments from all quarters, and must submit them at the very moment of interpretation and application to slight and to large modifications, as held under the supreme insight of the reason. The conclusions to be reached are of the most extended character, and are not of the exact form of the data from which they spring. Its deductions are the last deductions which the mind brings to embrace fully and to explain finally all previous work. The argument cannot be one, therefore, of details merely, but must urge the mind forward to its most comprehensive grasp. If we have dealt hitherto with physical inquiries, and insist on the short, earth-planted steps of the old path, we can do nothing in the new search. We must mount; we must allow the parts to be swallowed up in the whole; we must take a bird's-eye view; we must observe relations not as they lie between single things, but as they embrace all things.

We cannot do a work of this sort too often if we do it at all well. The view from a mountain summit, though many times repeated, never loses its in-

spiration. Its extension is so much beyond that natural to the mind that the mind each time feels afresh its enlargement, and takes in expansively its grand measurements. Natural Theology holds in survey the physical and spiritual worlds; and when these sink below the horizon, or are forgotten in the day, or are hidden in the night, the spiritual impulse which carries us over to these broad convictions is lost. If any should say that these truths are thereby shown to be illusions, we answer, not so: they are simply too far-reaching to be grasped and held by a torpid mind, as the sublimity of the sublime object can enter only amid lively thoughts and alert sensibilities. All progress in human experience leads us to a better outlook of these final relations, and each view exalts that experience. So one penetrating a mountain range more clearly apprehends its greatness, and the breadth of the lands it holds apart on either side.

Not only does ordinary progress require this frequent vivification of great truths; the developments of science have materially affected the data of Natural Theology, and must be allowed freely to modify its conceptions and to shape its forms of proof. Our position is higher, and things near and remote must be foreshortened to suit it. If we put the new wine in the old bottles, the bottles are broken and the wine is spilt.

Incident to this great change in the intellectual view, many new doubts have sprung up, many new attacks have been made, and many inadequate answers have been given. We ought, therefore, to

strive after renewed adjustments of thought in these more difficult fields of inquiry, even though our conclusions may in their precise form scarcely last out our own day. The blessings of each day must be made, if possible, sufficient unto it, and we shall hardly reach those of to-morrow unless we have appropriated those of the passing hour. Our landscape is before us with its sunshine and its shadow, and we should enter deeply into its lessons.

One cannot write well on Natural Theology and undertake his task mechanically. He cannot make each day a day's march, and so reach the journey's end. Every step is in a contested territory. It is contended for on the one side by instinctive fears and aversions, by narrow but close-knit arguments, and the whole army of prudential sentiments. It is held on the other side by hope and aspiration, by the insight of large thought, and by those emotions which spring up as retainers of the moral nature. Every step, therefore, must be taken with courage, and firmly held with a loyalty to all that is highest within us and brightest before us.

We have one help. We may pursue this path in the profoundest sympathy with the obscure and the clear convictions of many of the strong minds and strongest hearts that have preceded us. We may not be able to say why it is that men eminent in science, pure in life, governed even by philanthropy, have taken the attitude of distrust and denial, but we do know why a Zoroaster, a Socrates, a Plato, a Paul, have cherished a belief of the largest scope. It has been fed by the

inner fires of a pure spirit. In treating reverently and searching profoundly and answering hopefully these inquiries, we draw near to those in all time whose life has been the largest, and whose vision has come to them by an ascent heavenward of their own spirits.

WE should not think it wise to offer another work on Natural Theology simply as a renewed presentation of the ingenious constructions of the world. This work has already been admirably done; and science in a hundred ways has reached the same result The prevalence of law and its many fortunate products are the staple facts of our time. In presenting the proof for the being of God, we have no longer to discuss results, but the methods rather by which these results have been reached. It is because of this new form in the theistic argument, that we wish to give it one more reconstruction. The opposition has changed front, and so renders a corresponding change necessary on the part of the defense.

This shifting of the conflict has attended on a great increase of knowledge, and new views of the methods of development in the physical world. We wish to recognize most fully the value of these attainments, and to see clearly their relation to theism. We are quite prepared to accept evolution —the present, intellectual solvent of physical problems,—in all the facts it offers, while we are still at liberty to give those facts the interpretation which

is most in keeping with the two kingdoms, physical and spiritual, which make up the universe in its outer form and inner force.

It is exactly here that we hope to add something to the work of our predecessors, (1) in a more complete recognition of all the results of scientific inquiry, (2) and in pointing out the relation of these facts to an intellectual exposition of the universe. To have done even a little in this direction is an ample justification of a laborious effort.

We shall give in our argument comparatively few illustrations of apparent design, because these are now so abundant on all sides, because none overlook or deny their existence, and because the logical form of the proof is not affected by them. We aim simply to open doors here and there in the several departments of the great cabinet of divine wisdom, in each case helping thereby our inquiry into the evidence of personal oversight as contrasted with unguided law, of reason and unreason as the primitive powers of the world. This discussion thus ceases to be one of minute and multiplied details, and becomes one of the most comprehensive ideas. The question is: Which key to this language of the physical world is most concurrent with reason, that of physical or of spiritual forms? Does our knowledge stop with a certain rhythm of the words in the lines, which they seem to catch from each other, or are there depths of spiritual meaning in them fully open to us? This is more than a scientific inquiry, it is in the highest sense a rational one, one to which all the resources of our nature must

be brought. The question is in itself ultimate, and can not be answered save in view of all forms and all conditions of knowledge. The problem has been searched many times, and will be searched many times more, with some gain, we may believe, each time in reference to the final solution.

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INTRODUCTION.

§ 1. Natural Theology treats of the nature, being, attributes and government of God as disclosed to us in the physical and spiritual universe. An inquiry into the being of God is properly opened by an inquiry into his nature, that is into the general form of the being we ascribe to him. If there is anything, or is even thought to be anything, either peculiarly difficult or absurd in the conception itself, we are not prepared, till we have weighed the objection, to proceed with the proof. It is useless to undertake impossibilities; to try to establish by reason an irrational conclusion. Our first task, therefore, is to exclude vagueness, inadequacy and contradiction from the conception itself of the nature of God. We shall then be ready for a proof of his being. This established we may discuss in detail his attributes, and point out the methods of his government.

There is one other topic, which though not directly covered by Natural Theology, is yet very essential to it, the immortality of man. If man is not immortal, (1) these theistic truths will have compara-

tively little interest for him. His portion in them will be greatly reduced. (2) The two doctrines of the divine existence and of man's immortality are associated in the most intimate way. We shall not be able to establish the second without the first; and yet the first in its proof has great occasion for the second. They only enter the mind together. If man is not immortal, the moral problem of the world becomes so insoluble as to bring darkness to the attributes of God, and doubt to his very being. If the two are not strict correlatives, they practically hold this relation. (3) The government of God especially can not be wisely discussed without first settling this question of immortality. Without immortality God's moral government is of a very fragmentary character. (4) The form of the proof and its spirit are identical in the two doctrines. (5) Religion always assumes them both, and puts them on the same basis as first principles. We, therefore, add the topic of immortality to the four topics embraced in Natural Theology. The discussion in order to be either clear or complete must crave this freedom.

§ 2. The methods of proof involved in Natural Theology are of a very comprehensive, subtile and somewhat unusual character. They will, therefore, have very different force for different minds. These proofs are not the product of a plain deductive process, nor yet of a simple, inductive one. They are not altogether analogous to those of logic or mathematics or science. Much effort has been expended to hit on a single, sufficient deductive proof,

but without success. The feeling which prompted the undertaking was a mistaken one, and the failure has served still further to embarrass and obscure the question. The broadest truths cannot be the immediate product of the narrowest method, nor are these proofs of the divine being presented to the senses, nor are they directly involved in the relation of sensible things to each other. A merely empirical philosophy can give us no aid. Such a philosophy can walk up and down among physical facts; it cannot rise wholly above them. It can explain the products of a continent when it is discovered; it can make no voyages in search of new ones. The argument for the being of God is one of comprehensive and searching interpretation; it is the spiritual exegesis of the universe, and must find its spirit and power in the insight of the exegete. In these latest and largest arguments—which are also the earliest—there is no escape from personal quality.

The proof of the being of God has both intuitive and empirical elements, both deductive and inductive steps, both emotional and intellectual force. If one is disposed to disparage any knowledge or any experience or any kind of argument, he will, in the discussion of these most searching questions, be correspondingly partial and obscure in his conclusions.

The feature of most peculiar interest in this proof is the extent to which the emotions enter into it. The feelings are usually thought to endanger and distort argument. Here is an argument that can be carried to no successful issue without them. Its

premises are emotional, its conclusions are emotional. In this respect it is allied to historical criticism and social science. We cannot reason from man to man, from man to society, from one phase of society to another, without understanding man's nature, and recognizing the fact that feelings are quite as potent with him as thoughts. Neither can we reason from the spiritual universe as expressed to us in man to its spiritual source without entering profoundly into its most distinctive feature, to wit, its high and far-reaching emotions. The personal manifestations of God in the world are as clearly emotional as they are intellectual. And we cannot be dead to them in the one respect and awake to them in the other. We cannot discuss music as a fine art without an appreciation of harmony, nor can we understand the character of God, the proofs of his being, without a living perception of the spiritual relations in which the divine attributes are disclosed. If God is love, he must be known as love, he must be felt as love. The light of the sun's rays does not discover to us their heat; this is an additional sensation. To enter the realm of the spiritual activities, combining as they do light and heat, is not the simplest but the most complex effort of our powers.

The feelings of men have gotten hold of this truth of the Divine Being sooner than their thoughts. Hence it has happened that when scepticism has arisen, the tender plants of faith have been at once nipped by the northern breath. The feelings themselves, partial and feeble, could not justify them-

selves, and seemed to bear the aspect in their perverted forms of half groveling instincts. The thoughts, in the meantime, had nothing distinctly to offer us. We can return again to sufficient belief on this subject—to the truth—only by strengthened thought and purified feeling. Having once miscarried by the feelings, we are liable to miscarry a second time by the thoughts, before we shall be able to combine the two in a comprehensive grasp of the truth.

The attitude of the mind finally reached in this field is fittingly expressed by the word faith. Faith is emotional vision. It is directed toward persons and personal truths. It sees the facts and comprehends their power through the personal elements that lie back of them. It is quick to discover spirit, and bold to trust itself to the righteous spirit. It is not less than intellect and vision ; it is more ; it is the insight of reason, moved to its best exertion by the purest affections. The argument for the being of God sweeps through the human soul, gathers up all its resources, and bears them forward into an all-embracing conclusion. It is not, therefore, less sound, but more sound ; is not, therefore, visionary, but a vision.

The existence of God, if it is true at all, is profoundly true, and must modify everywhere and in every way the universe. Our presentation of the proof may be weak and deficient, but the proof itself, if proof there be, cannot be so. It must bathe the globe like light, but whether we see it or not may depend on narrow personal senses.

One reason why the argument has so often stumbled has been that it has walked on the surface, selecting this and that as an indication of divine wisdom, with the implication that most things show it feebly or not at all. The proof, if good at any time and anywhere, must be good to the very beginning and clear into the centre. We can hold nothing in the outskirts if we have lost the heart of the kingdom.

It is for this reason especially that the whole argument needs reconstruction, that we may see afresh how the procession of things comes forth from the gates of time and the thought of God.

CHAPTER I.

NATURE OF GOD.

§ 1. By the nature of God, as distinguished from the attributes of God, we mean generic forms as opposed to specific qualities, general conditions as contrasted with the peculiar qualities which come under those conditions. Thus God is spoken of as a spirit, infinite, eternal and unchangeable. If the assertion be true, it gives us his essential nature, but leaves us to inquire into his particular attributes. Any discussion of these attributes should be preceded by one of the nature of God; unless we are prepared to assume that nature as something acknowledgedly rational.

But the intelligibility and sufficiency of any notion of the nature of God are now denied with peculiar earnestness. Some regard the conception as illusory, being beyond the range of knowledge; some esteem it a mere negation, and others as made up of contradictory terms. If any one of these opinions is true, a discussion of the being and attributes of God is time thrown away. A conception which is an unintelligible symbol, or is purely negative, or is self-contradictory, can not be made

the subject of proof as to reality, or of exposition as to quality.

Our first question then is, Whether a conception of the nature of God sufficiently real and rational to be the subject of thought is attainable? It is worthy of remark in passing, that our adversaries find somewhere in their thoughts a conception sufficiently clear to be made the subject of very extended discussion and denial; we have, therefore, in the light of their example, no reason to despair of finding one substantial enough for the more living processes of thought—those of affirmation. Our inquiry is not whether a complete conception of the nature of God can be reached; but whether one sufficiently intelligible and self-consistent to be the subject of safe reasoning is open to us. We can bring no imagery, no comparison, and very little expository thought to the forms of being given by our own spirits; yet the word spirit is a very secure factor in thought in spite of all that. That God is a spiritual being, infinite and absolute, we regard as an assertion clear and rational enough for the purposes of safe inquiry: we can see by means of it as easily as by the light of the sun, though both may strain and weary the eye when turned too directly and too long upon them.

Is the conception beyond our knowledge? If it is strictly so, then it must wholly disappear, as the mind has in it no real content. The affirmative finds support in Mr. Spencer. The discussion is found in the first part of his First Principles. It is also repeated in the first chapter of the Cosmic

Philosophy. These objections are presented to a knowledge of the nature of God, that we can form no conception of the infinite, that all our knowledge is classification, and that it is all relative.

The inconceivability of the infinite may mean one or other of two things; either that we can construct in the imagination, in a phenomenal form, no image of God; or that any statement of the nature of his being involves logical contradictions. In the first meaning, the objection has no force. The life of the Infinite cannot of course reappear in the imagination, since it has never come within the range of our experience. The second meaning, of an irreconcilable conception, Mr. Spencer illustrates and supports by extended quotations from Mr. Mansel. As Mr. Mansel's opinion demands separate consideration, and as Mr. Spencer adds nothing to it, we shall meet this difficulty a little later.

The second objection, that all knowing is classifying, is incident to a philosophy far too narrow for the facts of mind. It excludes not only the infinite, but all ultimate ideas and all primitive sensations and perceptions as well. Classification is a secondary act, and can only be applied to material by means of ideas, both being arrived at in some other way. Some form of intuitive action must precede every form of reflective action.

"As we find by analyzing it, and as we see it objectively displayed in every proposition, a thought involves *relation*, *difference*, *likeness*. Whatever does not present each of these does not admit of cognition, and hence we may say that the Unconditioned,

as presenting none of them, is trebly unthinkable."* We may grant this in reference to the judgment, but the judgment is a secondary power, whose data are always given to it in ultimate analysis. To affirm that anything is unknowable because it is unthinkable, is to overlook intuitive knowledge, both of the reason and of the senses. The results of a thinking process are only a portion, and in time at least a secondary portion, of our knowledge. We are quite willing to grant that the infinite is not found among these products of thought.

The objection that all knowledge is relative is of much the same nature. If we were to grant the assertion, the concession would cover the whole ground of knowledge, and so exclude fundamental truth from all knowledge. If relativity excludes known truth from knowledge, it must exclude it from the knowledge of the finite as well as from that of the infinite. If the relativity of knowledge is not destructive of all knowledge, we must be further shown why it is destructive of that of the infinite and not also of that of the finite. If there is absolutely nothing but a personal impression in our finite knowledge, then that knowledge is no true knowledge, and cannot lie between man and man. If there is something more than subjective impressions in current thought, then there may easily be in our thought of God.

But there is no truth in the assertion that knowledge is all relative. Sensations and perceptions have a personal physical element which we cannot

* First Principles, p. 82.

eliminate and which makes them partially relative. But the highest intuitive and ratiocinative truths yield no color to this assertion and offer a convincing reason against it. The absolute identity of convictions in all minds concerning these truths, as for example the truths of mathematics, is inexplicable on the supposition that they all contain a personal, variable element, are all relative. The knowing is immediate and the knowledge is absolute; and this is shown by the instant and complete identity of results. Certainly whether we choose to call this knowledge absolute or not, we can wish for none more absolute concerning God. Knowledge of this type would answer all our purposes. Relativity of knowledge must mean something more than knowledge through a power in relation to it; it must mean that this power puts some unknown and variable element into knowledge and so narrows it.

But we need not spend time on these objections for two reasons. (1) They spring from a peculiar philosophy, and have no more strength than falls to it. It is quite true that an empirical philosophy sustained by the doctrine of strict evolution furnishes no shadow of proof for the being of God. The case must be brought in another jurisdiction, that of philosophy proper. This fact will more and more appear as the discussion advances. (2) Mr. Spencer himself implicitly abandons his proof in his conclusion. He starts with the unknown and reaches "the Unknowable." There is the same difference between this beginning and this end as between the

assertions; there may or may not be a continent in the Western Ocean, we can never know; there is a continent in the Western Ocean, but we cannot reach it. Concerning the truly unknown we can affirm nothing, not even existence. When Mr. Spencer proceeds to clothe the unknown in the personal vestment of the Unknowable, and to keep it henceforth before the mind as an essential feature of his philosophy and the point of reconciliation between science and religion, he has left his premises quite behind him. "We are conscious of the relative as existence under conditions and limits; it is impossible that these conditions and limits be thought of apart from something to which they give the form. The abstraction of these conditions and limits, is, by hypothesis, the abstraction of them *only*, consequently there must be a residuary consciousness of something which filled up these outlines, and this indefinite something constitutes our consciousness of the non-relative or absolute. Impossible though it is to give to this consciousness any qualitative or quantitative expression whatever, it is not less certain that it remains with us as a positive and indestructible element of thought."* The most remarkable thing about the philosophy of Mr. Herbert Spencer is that he rarely has courage to face his own conclusions, and often puts in place of them those of his adversary. 'A positive and indestructible element of thought,' then, is not knowable. Does not this use of words so limit the word *knowable* as to destroy the value

*First Principles, p. 90.

of his entire discussion? It plainly means not completely conceivable, not knowable in the details of form. The continent is, but we have no chart of it; we not only *may* talk about it and think about it, but we *must* do so. It is an indestructible element of thought. Plainly a conception so positive and necessary must have some predicates; it would perish instantly without them. Re-assured, therefore, we will go forward and inquire what they are.

§ 2. Another way in which the infinite is set aside as a subject of thought is by denying to the conception any positive character. It is affirmed to be a negative notion only. The statement is well made by Sir William Hamilton, and is pronounced by Mr. Spencer to be "clear and conclusive." "The mind can conceive, and consequently can know, only the limited and the conditionally limited. The unconditionally unlimited, or the Infinite, the unconditionally limited, or the Absolute cannot positively be constructed to the mind. They can be conceived only by thinking away from or abstraction of those very conditions under which thought itself is realized, consequently the notion of the Unconditioned is only negative—negative of the conceivable itself. * * * We cannot positively represent, or realize, or construe to the mind—as here understanding and imagination coincide—an infinite whole, for this could only be done by the infinite synthesis in thought of finite wholes, which would itself require an infinite time for its accomplishment."* This presentation is open to

*First Principles p 74.

very obvious objections. The notion of the infinite does not come to us as here indicated. It is not a construction of the imagination. It would never find entrance on those terms. It may flash instantly up in connection with time or space, with little or no effort to reproduce their parts before the mind.

If the infinite were 'only negative,' a mere denial of something—though of what hardly appears—it would be a simple, manageable conception. It would be in one form or another the conception covered by the word nothing. Such an assertion, rightly made, would not give us a moment's perplexity. The removal by the mind of finite limits to space or time or power is not such a process. It is not negative but positive in thought; is not destructive but constructive. The notion present in the word *time* or *power* is not thus denied in one way or another way, but infinitely magnified in all the ways which belong to it, and any particular denial is the passing product of the broadest affirmation. An appeal can here be safely made to each one's insight. The notion of infinite space can be as clearly and positively held and as safely applied as the idea of a cube of space, each edge with the measurement of a thousand miles. Such a block is not definable to the imagination. Sir William Hamilton is wholly in the wrong, and the wrong is the source of the confusion on this subject, when he says, that "here the understanding and the imagination coincide." The imagination can do very little in the presentation of any ex-

tended fact, even though it be a phenomenal one; much less can it manage an unphenomenal one. It can do little with the earth's surface as a whole, and very little with interstellar spaces. Yet the facts pertaining to both are capable of an intellectual application, mathematically exact. No rational mind needs to blunder in the use of such a notion as infinite space, any more than in the use of measurements in space. Sir William Hamilton, also, as is the wont when a false lead is followed, undoes his own work at the end. "We are thus taught the salutary lesson that the capacity of thought is not to be constituted into the measure of existence, and are warned from recognizing the domain of our knowledge as necessarily coëxtensive with the horizon of faith."* Faith that is rational, indeed that is real, must involve some measure of knowledge. We cannot have faith in a being who is a negation, nor in reference to a fact that is absolutely unknown in all particulars of form, condition and existence. We cannot regard the assertion that the absolutely unknown may exist as a very important or salutary lesson, as it can mean nothing of moment to us till we apply it to some particular thing, as to new forms of matter, or to spirit, or to a Supreme Spirit, but in this application a known element at once enters.

§ 3. But the two views that the infinite is unknowable and negative in thought derive whatever force belongs to them from a third view; that the conception is made up of contradictory elements.

*Ibid, p. 76.

This is the only ground on which it can be abolished. If it were either unknown or negative it would already be abolished, it would never have appeared. The mind cannot be harassed by things not present to it, or which it has distinctly wiped away, not by a negation, but as negations. Mr. Mansel has presented in his Limits of Religious Thought fully and in a great variety of ways, the interior contradictions of the notion of the Infinite.

He defines the First Cause, the Infinite, the Absolute,* and then proceeds. "These three conceptions, the Cause, the Absolute, the Infinite, are equally indispensable; do they not imply contradictions to each other, when viewed in conjunction as attributes of one and the same being? A cause cannot as such, be absolute; the Absolute cannot as such, be a cause. The cause as such, exists only in relation to its effect: the cause is a cause of the effect; the effect is an effect of the cause. On the other hand, the conception of the Absolute implies a possible existence out of all relation. We attempt to escape from this apparent contradiction, by introducing the idea of succession in time. The Absolute exists first by itself, and afterward becomes a cause. But here we are checked by the third conception, that of the Infinite. How can the Infinite become that which it was not from the first? If causation is a possible mode of existence, that which exists without causing is not infinite; that which becomes a cause has passed beyond its former limits * * * Consciousness is only conceivable as a re-

* Limits of Religious Thought, p. 75.

lation. There must be a conscious subject, and an object of which he is conscious. The subject is a subject to the object; the object is an object to the subject; and neither can exist by itself as absolute. * * * If an absolute and infinite consciousness is a conception which contradicts itself, we need not wonder if its several modifications mutually exclude each other. A mental attribute, to be conceived as infinite, must be in actual exercise on every possible object; otherwise it is potential only with regard to those on which it is not exercised; and an unrealized potentiality is a limitation. Hence every infinite mode of consciousness must be regarded as extending over the field of every other; and this common action involves a perpetual antagonism. How, for example, can Infinite Power be able to do all things, and yet Infinite Goodness be unable to do evil?"*

This subject is presented quite at length by the author, but the nature of the difficulties he raises, is sharply rendered in the words we have given. Their source can be clearly pointed out without any further multiplication of them. We need not deny that these contradictions are found in the conception of an Infinite Being as presented by Mr. Mansel; but they may as easily serve to expose the faultiness of the conception as to abolish it altogether. This presentation is made to rest on the following definitions. "To conceive the Deity as He is, we must conceive Him as First Cause, as Absolute and as Infinite. By the *First Cause*, is meant

* Limits of Religious Thought, p. 76.

that which produces all things, and is itself produced of none. By the *Absolute*, is meant that which exists in and by itself, having no necessary relation to any other Being. By the *Infinite*, is meant that which is free from all possible limitation; that than which a greater is inconceivable, and which consequently, can receive no additional attribute or mode of existence, which it had not from all eternity." *

Though these definitions are not altogether fortunate, the defect in the subsequent discussion lies chiefly in the way in which they are expanded and applied. The subject demands a careful consideration, for if our very conception of God is self destructive, it is plain that we cannot pass the threshold of Natural Theology.

The terms infinite and absolute are applied to God in enlargement and elevation of his nature, and evidently therefore are not to be used in a way that limits and degrades it. Infinite and absolute are formal not substantial words: they express not the nature but the degree, the mode of that to which they apply. Like all formal terms they must be used in harmony with the subject to which they are attached, and not in disregard of its inherent nature. Formal attributes cannot be allowed to destroy the substantial attributes on which they are dependent. These forms may or may not be pertinent to the subject-matter; this subject-matter must be allowed to settle the fitness of their use. It may admit them in one way and not in another. Time is

* Ibid, p. 75.

not infinite after the method of space, but after its own method. Time is infinite in one line, space is infinite in all lines. We may express this fact by saying that time is infinite in one dimension, and space in three dimensions. The infinity of space is not, therefore, something more complete than that of time. Each is infinite, but infinite in its own way according to its own nature. The term is equally applicable to both. So space is continuous and time is successive. This fact is not derogatory to the one or the other, or to the infinity of either.

We would define the infinite as a formal term which expresses the absence of any limit in the attribute, being or entity to which it applies. It does this without any modification of the object itself to which it is attached, and the manner and correctness of its application are to be seen in the nature of the attribute, being or entity under consideration. We would define the absolute as expressing a form of being ultimately independent of all other forms of being. We have no occasion to define a First Cause. The words are unfortunate and self-contradictory, and are almost sure, no matter how we guard them by definition, to disclose in any discussion the contradictory ideas that enter into them. If we regard God as a Spirit, the word spirit being defined by the human spirit, the adjectives infinite and absolute carry with them at once his eternity and supremacy. He is before all things, and He is the source of all things.

The object of these adjectives is to express the exaltation of the Divine Spirit; and the only in-

quiries concerning them are, in what directions, from the nature of the subject, can they be applied? and, are they in these directions, with this end in view, consistently applicable? The adjective infinite is primarily referable, when united with the word spirit, to power and wisdom. The Infinite Spirit is infinite in power and wisdom. Is there here any incongruity or contradiction between the formal element expressed by the word infinite, and the substantial elements of spiritual power and wisdom? Have we unwittingly, in this ascription of praise, destroyed, at least mentally, the object of praise? If one says infinite sweetness, or infinite sharpness, or infinite pleasure; such a discrepancy appears immediately. The same would be true of infinite power, if by infinite power is meant power realized in action. No expressed force can be infinite, as no phenomenal fact can be infinite. Power in passing into force, into facts, becomes definite and finite. The universe, no matter how large, is not infinite; any more than one of its parts is infinite. Infinite power, therefore, is potential power, but potential power is preëminently and exclusively spiritual power. The only potential thing in the universe is spirit. We may, then, speak of the Infinite Spirit; indeed, it is the only form of power to which the word could be applied. But when we use the word infinite in connection with spiritual power, we not only may mean, we must mean, potential power. The word is applicable in this direction only. There are unmeasured depths of possibility in God, but that which He has made

is finite in every portion of it. We must, then, reject the assertion of Mansel, that an attribute, to be conceived as infinite, must be in actual exercise, and with this assertion reject all the contradictions derived from it. The exact opposite would seem to be true; the infinite always implies the potential not the actual, always pertains to the spiritual and not to its material manifestation.

In applying the adjective infinite to God, we affirm that an inexhaustible potency cradles the universe; but the universe itself, the partial expression of this power, remains what it always has been and must be, finite. Creation is a passage from the potential to the actual, from the infinite to the finite.

Infinite power and infinite wisdom and perfect love no more overlap and cover and so exclude each other than do infinite space and infinite time. Infinite power expresses itself as force and infinite wisdom as rational relations and perfect love as beneficent relations. Perfect love and wisdom are a law to infinite power, because they are all gathered up in one Being; but love is not a narrowing of power. To insist that the self-contained laws of rational life are a restriction of life, is to be misled by words; is to affirm that unreason is better than reason, unrighteousness than righteousness. The power of God is not reduced by his moral nature, it is guided by it. We may attach a very definite and a very sufficient meaning to the word infinite, in its application to God, and yet respect perfectly the inherent nature of the attributes that pertain to Him. The assertion seems childish that perfect love is in

contradiction of infinite power, because love and power restrain each other, both under the law of reason. The only way in which this can be made to seem plausible is, by confounding potential power with expressed force. Force in expression is limited by love, but not the potentiality from which it springs. The humane master who does not beat his servant has not, therefore, less power than the inhumane master who does beat him.

Similar considerations are applied to the word, absolute. By absolute we express the ultimate independence and completeness of God within Himself, that He is the unobstructed source of all things. Men no sooner begin to work than they find themselves limited by the material at hand. They suffer a double restriction, the feebleness of their own forces, the discordant nature of independent forces. They can only accomplish such results as their own strength and the material at hand will admit of, in their relation to each other. A system of actions and reactions is established and is expressed in the issue. It is this constant dependence that is meant by man's relative weakness. When it is said that God is absolute, it is meant that He puts forth His creative acts into a void, and is subject to no reactions that He has not contemplated and desired. The material used is not foreign to Him, nor is it feeble or refractory in His hand. The word must, indeed, be applied rationally and rationally restricted. Reason is a law unto itself, it does not thereby cease to be absolute. Its exaltation, its absoluteness are found in this very

fact, that it flows forth with an interior perfection that anticipates and provides for all results, and makes them things not to be deprecated or departed from. The results certainly are relative, the activity of God is relative within itself; but there is still left a consistent and sufficient meaning to the word absolute, when we express by it the transcendent fact, that these relations are the exclusive product of the Divine Reason, acting under its own law: that they are not, as with us, more or less foreign to His thought and a limit on His power. This explanation also sweeps away another large class of alleged contradictions. Each divine act is, indeed, relative, but relative under relations imposed exclusively by the Divine Reason; and this is the fact stated when we say that God is absolute. The thought of God is sufficient unto itself. The Absolute is in its manifestation the relative, precisely as the Infinite is the finite. It is for this very purpose, the inclusion of all things, that the idea of God enters.

§ 4. Now let us look a little more independently at the conception properly covered by the word God. We shall do it but briefly, as we should otherwise anticipate more favorable opportunities for the gradual expansion of the idea which will be offered in connection with the proof of His being. It is not necessary for the purposes of rational belief that we have a complete, or anything like a complete conception of the Divine Nature; but only that we have one consistent and intelligible. We have but a vague notion of the form of being

which belongs to our own spirits, and a still vaguer one of the relation of the mind to its physical organs. Our lives are not, therefore, in reference to these elements of thought, irrational or unmanageable.

We have no more occasion to regard as infinite the facts of consciousness in God than we have to regard His works of creation as infinite. Indeed, for the very reason that anything which He does is finite, becomes finite in the very doing; everything which He thinks must also be finite. Infinite thought is as impossible as infinite action, as infinite creation. Thought and action reflect each other, and the conscious states in the Divine mind can no more be without limits and relations than can the creative acts which express them. The assertion that the infinity of God attaches to His conscious states is quite premature, and the spirit of this haste is seen when the destructive inference is immediately drawn, that the facts of consciousness are, therefore, inconceivable and apparently impossible. It is, indeed, impossible that mental processes should be rationally relative, yet infinite. But is it not a blind infatuation, a verbal illusion, to destroy reason by magnitude, the substance of righteousness by an extension impossible to it? Losing the thing, we lose the form also. By an assertion of the infinite we abolish the infinite. The infinity of God lies in the potentiality of thought, while thought itself is realized under its own inalienable forms.

It is sometimes implied in this connection that

consciousness necessarily involves a single serial line of mental facts, and is thus incapable, not only of infinite but of indefinite extension. Plainly this is not true. The phenomena of mind are not in the mind's grasp of them single, but complex. The vision of the mind is allied to that of the eye. It covers many things with relative indistinctness and several things with comparative completeness. Contrast the consciousness of Alexander Humbolt with that of a simple farmer. There is in it an immense superiority in the multiplicity of the facts it holds and uses; yet there are no strain, no fatigue, no confusion incident to this greatly enlarged power. There is in the nature of the case no limits to this extension. Intellect can transcend itself in all degrees. The space between the feeblest reason and the reason of Humbolt is a mere unit of measurement which may be repeated again and again. The mind of man is cognizant of a great variety of facts within the range of his senses and works them all into one experience. The mind of God may pervade the universe, as human thought follows after sight and sound, and the supposition contradicts no experience, violates no necessary truths. Certainly it transcends experience, but it does not so transcend it as to be unintelligible to us. The truth is, the empirical philosophy has been so long busy in dwarfing, stultifying and disparaging the reason, as to make it timid and uncertain within the legitimate scope of its conclusions. When it is said that we get a narrow range of the physical world by virtue of a nervous system,

while the universe, as a whole, presents no such system, and is consequently impermeable to mind, we reason in a most narrow and stupid way from the limitations of our own finite being to a being without these limits. To make the finite a bound of thought is to destroy by anticipation all possible proof of the infinite ; to make it a type and symbol of thought is to interpret the infinite. Are we to say that God cannot move rapidly from one portion of the universe to another because there are no railroads? The empirical philosophy should cut short all argument at once on this subject by the simple assertion that the finite can find no data in its experience for the discussion. That it does not do this, simply shows that it can not, dare not be logically true to itself. It belongs to reason, and none of us can so sell our birthright as to forget it, to expand old terms under new conditions with the loss of neither, to hold fast to the idea of an intelligence which does not exist under the limitations of the human mind. An experience that never transcends itself through its rational terms is the experience of an idiot. That is precisely what reason is about, throwing the mind beyond experience by the interpretation of experience.

God is the Supreme Reason. But reason is known unto us in the inherent force and universality of its laws. Reason is the seat and source of all orderly relations, and must externally exist in, and express itself through, them. Primary among these relations are those involving space and time. Space and time are accompanying conditions of every work of reason,

and reason brings them forward as the necessary forms of its activity. The image in the lake or the mirror, the dream, the poem, the painting, the dramatic representation are all shaped by a constructive human mind under these terms of a rational experience. We cannot enter the spaces or times which belong to the dreams of our neighbors, because the dreams themselves are unknown to us. We can construct with them under the same terms the spaces and times of a tragedy. Space and time are strictly formal elements dependent for their reality on the reality of the things they contain. The space in the mirror disappears when the image is lost, the space of the dream when we awake from it. The space and time of the world about us are real only as things and events are so. Space and time come forward with the Eternal Reason, involved in it as the first elements of its constructive acts. The mind as rational bears everywhere with it these formal conditions of its activity, and the Eternal Mind gives to them the breadth and stability which belong to the foundations of the universe which it has built up under them. As the universe is the thought of God, so the constructive reason existent in it carries with it space, time, number, all the rational conditions of its own revelation. These forms of reason, like the Reason they hedge about, are infinite, eternal. They are not separable, but one. Such may be our conception of God, a conception which we must constantly reconstruct as we find occasion.

CHAPTER II.

BEING OF GOD; UNSATISFACTORY FORMS OF PROOF.

§ 1. In entering on a form of proof involving so many considerations as that for the being of God, and considerations which have such very diverse weight for different minds, we need to prepare the way for it, as far as possible, by settling the legitimacy of the various appeals so constantly made to psychology in the course of the argument. Proofs, both for and against the being of God, are characterized by very loose and unsatisfactory assertions, assertions that have no clear and sufficient basis in the human mind. These statements pertain chiefly to psychology, as the whole deductive and inductive force of an argument extending to the being and nature of an Infinite Spirit must be derived from the spirit of man and from his experience.

It is urged with great confidence against the legitimacy of the growth of the idea of God, that it has been in all stages anthropomorphic, and, in its earlier stages absurdly so. The statement must be admitted, but the correct conclusion from it is not that usually drawn. It is inevitable that we should interpret the nature of God by our own nature, that

this interpretation should involve many errors, and be acompanied by a tardy enlargement of thought. The process is not, therefore, illegitimate, but like any process of human thought, partial and progressive. There is no reason why we should require the conception of God to be complete from the beginning any more than any other conception, but every reason why we should not. Its very magnitude must make the range of error and of partial statement correspondingly great. Growth here is as much in order as elsewhere, and if it were not present, the want of it would be fatal to our faith. That this growth takes place in the direction of human character affords no farther, no independent, objection to it; since human character covers the spiritual facts on which all inductions and deductions in this direction rest. Man must entertain the conception of God in the way in which it comes. Its only illustrative type is his own nature. The very theory of a Divine Being supposes man to be made in the image of God, and in consequence of this fact and this fact only to be able to entertain the knowledge of him. It is absurd to require our thoughts to transcend themselves; or to object to a conclusion because it does not overstep its existing data. The being of God is brought forward to explain, in their largest circle, spiritual facts, and physical facts in their relation to them. A Being quite alien to the spiritual world as expressed to us in man and for the time being understood by us through him would, by this alienation, fail in thought of the very purposes of exposition and comprehen-

sion had in view in the argument which establishes his existence. It is a strange objection to a method that it subserves its rational purpose in the only way open to it.

Science itself has disclosed in its history the same growth of conceptions from those more, to those less anthropomorphic in form. Science is not therefore, illegitimate in its general method. If, with Newton, we explain the phenomena of light by the supposition of a material substance characterized by "fits of easy transmission," we are none the less moving forward to the truer view. So simple and primitive a notion as that of causation has required a long period to separate it from chance and liberty, and to properly define it in its application.

There are many unwarrantable appeals made to consciousness in discussions of the being of God. This is much to be regretted, as they can lead only to confusion, hopeless separation, and even to a contemptuous rejection of the entire argument with which they are associated. We shall have little or no occasion to appeal to consciousness. Such an appeal, when rightly taken, can hardly be unsatisfactory to any mind, any more than an appeal to the eye or to the ear. For this reason, the perfect obviousness of the facts which appear in consciousness, we have rarely any occasion to refer to it. Consciousness offers simply the phenomena of mind, thoughts, feelings, volitions, nothing more. The fact of thought, not the correctness of thought, is involved in consciousness. Consciousness gives us the material for an argument to the being of God,

but has very little to do with the argument itself. The confusion at this point arises from a tendency to use the word consciousness, not as the designation of the inseparable condition or form of all mental phenomena, but as a collective term for the mental powers, or still more obscurely, for the higher or more intuitive powers. An appeal taken to consciousness under this meaning necessarily escapes all refutation, for the primary powers referred to are not indicated, neither the exact form of their action. The issue is thus evaded by generality.

Another occasion of very needless confusion in an argument concerning the being of God is found in the use of the word conceivable. What weight are we to attach to the objection, that this or that statement is not conceivable? By conceivable is meant, or should be meant, the possibility of a consistent construction before the mind of the phenomena involved. The imagination, the constructive power, works within experience, and exclusively under its forms. If, therefore, any statement pertains either to the facts of matter or of mind, it is an objection to that statement if it does not admit of a coherent representation by the imagination—if it is inconceivable. An assertion, however, which is not concerning phenomena, but concerning ultimate being, as the existence of force, or of the soul, or of God, cannot be tested by the imagination, and it is in no way an objection to it to say of it, it is inconceivable. A sound is not disproved by being invisible. Things that are offered as ultimate ideas or as *noumena* are not weakened in-

their force by being pronounced inconceivable. The strictly empirical philosophy finds no grounds on which to admit the discussion of these ultimate terms; but having admitted them, it is not permitted to this philosophy to object to their validity, because they cannot be constructed in the imagination.

They are not presented as being within the range of experience. The imagination, from the nature of the power and from its dependence on the senses, is ruled out of the discussion of questions of ultimate being, since it is only of phenomena that it takes cognizance.

Another objection allied to this has much greater weight; indeed, if well taken. it must be admitted to be fatal to any theoretical explanations of the universe. This objection is that of the inherent contradiction in the terms involved. Reason can not reach conflicting conclusions and retain its force. The authority of reason is found in the ultimate coherence of its results. If any conclusion is not merely inconceivable but unknowable, it can carry no conviction to the mind.

Nor must we be allowed to make any appeal to intuition in these last and most difficult discussions of ultimate facts, save under the forms previously defined and adequately established in psychology. The range of intuition must first be settled, and the ideas properly referable to it, or it becomes a most convenient and most obscure way of cutting short inquiry that is not reaching a result satisfactory to us. Intuition, as an act of reason, yields certain

general ideas, like that of space, time, causation, of which the mind is in more or less constant use; it does not give specific facts of being, no matter of how grand an order these may be. No wise appeal then to intuition can be taken in an argument for the being of God, save in reference to those definite, constructive ideas—with their subordinate axioms—that have been distinctly enumerated and carefully established in psychology. On this condition only can we keep any logical process from dissolving in mist at the critical moment of its conclusion. In any other method the fundamental truths of psychology might be either passed by or overstrained in any subordinate branch.

Neither have we any more right to appeal to the feelings—in the form of faith—without an apprehension of their exact nature, and a careful estimate of their value as proof. Having once brought our cause before the bar of reason, we must abide there till a verdict is rendered. The feelings with which we support an argument—and they may yield us very valuable aid—must be disclosed in their intellectual attachments and rational force. Having in any way reached an inadmissible conclusion, we may not take refuge in faith from farther inquiry. This is to give to ourselves the unfair advantage in the conflict of becoming visible and invisible at pleasure.

There is one further condition of fair argumentation on this subject. Our human experience can be regarded neither as a term of strict measurement nor yet as one wholly irrelevant. The analogy which exists between the finite spirit and the In-

finite Spirit is neither complete, nor is it null. If it were complete, the discussion must end at once; for no repetition of the finite can give us the Infinite, and so the Infinite would be unattainable. If it were null, the same result would be reached. Having nothing whatever with which to interpret the Infinite, it would truly be to us the unknown. The finite, as regards substance, is the just basis of an analogical argument to the Infinite; while as regards those elements of form which touch the points of disagreement between the two, as finite and Infinite, no analogy can be urged. The reason of man is not a servant to his senses. It can discern the fitting scope, and also the necessary restrictions, of an argument of this subtile and ultimate character. To overlook this power of thought; to insist that we can never transcend our own experience, or interpret it in reference to ulterior ends of the reason, is to make the reason itself the helpless and hopeless product of the physical facts which encompass it. We easily apprehend one hour. This is a unit of time that lies in our experience. We are not, therefore, the less capable of the notion of eternity. The soundest philosophy recognizes this double play of the mind within and without its own experience, and so rallies all its rational resources. Without claiming this power, and availing ourselves constantly of it, any discussion of the being of God becomes preposterous. It is thus an absurd narrowing down of human thought to inquire after the brain of God; since the brain of man is evidently incident to a finite nature, enclosed by forms alien to him.

§ 2. An argument for the being of God involves an interpretation of the universe in its origin, character and destiny. It thus searches the mind for its most penetrative intuitions, and calls on the judgment for its most sober and extended combinations. The proofs for the being of God have gained data rapidly with the growth of knowledge, but the difficulties of their interpretation and coherent construction have increased in the same ratio. The argument as a whole thus presents as much perplexity to-day as ever before. While the grounds of belief have expanded on the one side, those of unbelief have equally enlarged themselves on the other. Faith, as hitherto, remains a triumph of the rationally constructive nature.

No argument of this character can rest simply on the intuitions. We cannot pass from an idea to a fact. However coherent the ideas of the reason may be within themselves, however serviceable they may be in the comprehension of facts, they do not involve in their ideal form the very facts. The truths of geometry express controlling relations in the outside world. They do not prove its being. The *a priori* argument of Anselm involved this error, an effort to make the inner coherence and scope of an idea a proof not of its validity merely as an idea, but of the existence of a fact corresponding to it.

The argument runs in this form. The human mind possesses the idea of the most perfect Being. But this idea includes that of necessary existence. "Surely that than which a greater cannot be conceived, cannot exist in the mind alone. For if we

suppose it exists only subjectively in the intellect and not objectively in fact, then we can conceive of something greater. We can conceive of a Being who exists objectively, and this is greater than a merely mental existence."* One cannot, therefore, conceive of the non-existence of God without a logical contradiction. The idea of the most perfect Being doubtless involves self-existence, but it involves it only as a part of the idea. An idea is no less perfect as an idea because there is no fact corresponding to it. Existence is not a perfection ; it is a mere question of facts. Anselm, when pushed with this obvious consideration, that perfection nowhere else carries with it real being, made answer, that no other idea was logically parallel with this idea of God, that no other idea contained the notion of necessary existence as part of its perfection. This last statement is true, but does not effect the argument. If actual existence is an addition to the perfection of the idea of God, so would it be to that of a circle. If perfection in one form carries with it no proof of reality, we can give no sufficient reason why it should in its most comprehensive form. It is the notion of self-existence, not actual self-existence, which the perfection of the idea covers. This *a priori* argument is not generally felt to be valid. Since it has demonstrative force, if it has any force, this extended rejection of it is wholly destructive of its practical worth, and indicates an inherent weakness never removed.

The argument, as modified by Descartes, is not *a priori*. He starts with the same idea, as present in

*History of Christian Doctrines, vol. i, p. 231.

the human mind, of a perfect, omnipresent, self-existent Being. He then inquires, What can be the the source of so peculiar and so primitive a notion? Having shown that it cannot be referred to the temporal and partial, he assigns it, with the vigor of a necessary conviction, to a personal Being corresponding to itself, commensurate with itself, and who alone can be a sufficient cause of its presence. When this idea in the human mind is taken up, not as an idea merely but as a fact also, and its source as a fact sought for, the argument ceases to be simply *a priori*. We raise the question, What other facts are a sufficient explanation of this fact, and so involved in it? Our deductive conclusions must here be guided and corrected by experience, by our previous psychological analysis of the nature and origin of ideas. This argument of Descartes is thus fully open to modification by all the valid results of Empirical Philosophy as to the growth of human intelligence.

The argument of Samuel Clarke includes still more empirical elements. Both his proof and that of Descartes are fundamentally affected by the joint progress of science and philosophy. If our ideas may have another origin than that assigned them by these philosophers, the argument gives ground. It calls, therefore, for no distinct discussion.

There are still prevalent obscure ways of appealing to consciousness on this subject. They involve proof of no definite quality or amount, since it admits of no analytic statement. Without affirming that we can furnish or ought to furnish a uni-

versal expression of the value of any given moral argument, we should insist that all points of appeal and tribunals of appeal be clearly stated, so that each mind in its own experience and powers may have grounds for judging the case. An argument that does not do this can carry little or no logical force. If we once admit the need of proof, we must also accept the conditions of proof. An assertion like the following, simply confounds discussion and, if pertinent at all, should precede proof, not follow it. "The being of God is simply the utterance or attestation of the soul in the presence of the object, which it does not so much discover by searching as apprehend in the act of revealing itself. It is not an argument, an inference, a conclusion. It is an attestation, the glimpse of the reality which is apprehended by the instinct of the worshipper and through the poet's vision as much as the gaze of the speculative reason."* We do not object to this as a simple statement of a complex spiritual experience of a high order, but to offer it as a proof or a philosophy, is as if one should expound the doctrine of perception by a rapturous enforcement of the impressions of vision.

No induction, not even the simplest, can proceed without the aid of intuition and deduction. The empirical proofs of the being of God have multiplied under the progress of science, yet have fallen off from their goal rather than approached it more nearly. We will first consider those narrowly inductive arguments whose miscarriage is becoming more and more apparent to all penetrative minds.

*Theism. British Quarterly, July 1871.

The insufficiency of these proofs has shaken the faith of many. Their persevering presence on the one hand, and the ease with which they are overthrown on the other, are the results of the passing phase of philosophy. When this superficiality of psychological thought shall have gone by, the way will be open for a broader comprehension of matter and mind. The more quickly we see, and the more fully we admit, that an inductive method, brought down to the conditions of an ordinary inquiry into physical facts, can not furnish sufficient proof for the being of God, the sooner shall we be prepared to search in more fortunate directions for better foundations for this truth and all the truths of our spiritual constitution. It is now greatly to be regretted that so many structures which might otherwise be admirable rest so largely on the drifting sand of empiricism.

§ 3. Every argument which seeks to establish the great truths of religion must start from the facts of the physical and of the spiritual world just about us. Its success in rising above these facts to a source more comprehensive than they are, and to one involving another grade of being, must depend on the ideas and the analogies under which the proof proceeds. The narrowly inductive arguments of which we are now speaking turn wholly on the notion of causation, and interpret the world exclusively by physical laws. By the aid of this notion and these laws no transition to a Supreme Ruler can be made; no data for it, not the slightest, are in the premises.

Causation is the controlling idea. The simplest

statement of this law, the ground in science, as often understood, of every other law, is, Every effect must have a cause. This law involves (1) the duality of all facts. It separates them into phenomena and noumena, into outward expression and inward force, into effects and causes. Mere phenomena, mere shadows expressing no energies, could be interlocked by no relation of causation. This idea also involves (2) the exact equivalence of causes and effects. If any portion of the cause was not expressed in the effect, or any portion of the effect was without a cause, the law would be broken. Causes may be combined in an infinite variety of ways with a corresponding variety of phenomena, but certain effects, and no other effects, are always potentially in the causes. The law also carries with it (3) the uniformity of nature as a congeries of causes. These causes remaining the same can produce no other effects than those which now belong to them. But causes cannot change themselves within their own circle, for that change would be an effect without a cause. Still further the notion of causation includes (4) the unbroken continuity of causes and effects in their several series. Otherwise a particular cause or effect might come into being without any previous cause or effect, that is without causation. Hence the correlation of forces—their indestructibility—is a corollary of the law of causation. It is this application of the law that most interests us, since by means of it we gain our control of things. We inquire into antecedents that we may through them modify con-

sequents. We are quite certain that no force, either in aid of our purposes or in opposition to them, will ever disappear, no matter how great a variety of forms it may assume.

This notion of causation some rest on the intuitive apprehension of the reason, and some on universal experience. Inwrought as it is in our thoughts, and confirmed by our daily observation as a law of the physical world, few indeed deny it, whether they are, or are not, able to find a sufficient place for it in their philosophy.

Our language in this direction is very comprehensive and very inexact; we designate causes by the effects which accompany and express them, and so term antecedent effects the causes of subsequent ones. The reason of this is evident. Effects are the sensible marks or language of causes, and we have no approach to forces or true causes, save through the phenomena which indicate them. Thus a collision on a railroad is said to be the cause of the death of a passenger, while both the accident and the injury were equally manifestations of invisible forces. Language is so exclusively guided by the convenience of expression, that we indicate as the cause of an event any of the previous effects associated with it to which our attention is especially drawn. Thus in the case just referred to, the result may be attributed to the forgetfulness of an engineer, or to an error in a telegram, or to a misplaced switch. Yet speech, in all its wanderings and vagueness, keeps somewhere within the range of the conditions and efficient forces which weave events together.

With this notion of causation, very definite within itself, and having the range of the world to the exclusion of chance and of liberty, what argument can be constructed for the being of God? We answer, no argument that offers any the least proof. The results reached are quite the reverse of those sought for. We may take the Universe as a simple physical fact. It presents a *plexus* of causes and effects. These involve previous causes and effects, and these still antecedent ones. We may affirm that we are thus led up to a First Cause. The conclusion is wholly illegitimate for many reasons. If, for convenience of expression, we divide the ascent to a First Cause into distinct steps, the causes in each step will be the exact equivalents of those which precede it, and those which follow it. No movement backward or forward alters the causes dealt with either in quantity or quality. It discloses them as divided and combined in a great variety of ways, as assuming many new and striking appearances, but never as different either in nature or amount from what they have always been. (1) An ascent, therefore, no matter how far continued, puts no change on the face of the facts, and brings us no nearer their ultimate explanation. (2) If we stop at any point, we stop arbitrarily. The causes we have chosen stand as causes in no different relations from those already passed over. Equally with them they are intermediate between previous and subsequent causes. We have no reason for the selection nor for the joint designation, First Cause. (3) By such a conclusion we quite subvert the very

notion of causation under which we are reasoning. For a time we are content to move backward under the guidance of this notion; at length we grow weary, and win the opportunity of rest by dismissing our guide. (4) A First Cause, thus arbitrarily affirmed, can be neither less nor more than an expression of all the causes which flow from it. It must have the same relations and the same measure with them. If we put a person in place of things, it is a deceptive substitution made possible by the darkness of distance. If we can not to-day, under the notion of causation, bring to an end a series of events in a person, we can not do it at any point in time.

If, passing by purely physical events, we take man in his intellectual and moral nature as the premises of our proof, the result will be quite the same. We have still no other idea than that of causation with which to expound that nature, or its relation to the world. The mind of man is enclosed on every side with physical forces. These forces run infinitely further back than it; they float it like an ocean; they envelope it like an atmosphere. That mind and that moral nature are only a peculiar combination of physical forces, one among the many transitional phases which forces are asuming. We have not, therefore, modified materially our premises by introducing man in them as a distinct consideration, since he is not fundamentally distinct from that general physical world of which he forms an integral part. The only result of an inquiry into phenomenal facts of any order under this notion

of causation is simply an eternity of forces, assuming various forms under laws, the results of their own natures. Such is the theory of the universe offered in "Theism." The work is the more notable as it clearly unfolds the conclusions which are contained in the Empirical Philosophy, and defines correctly its logical issue. The author does this service under the fitting cognomen of Physicus.

The volume is a pathetic expression of the impossibility of grasping spirit with a hand of flesh and blood. We refer to it simply because it puts in their most concise and vigorous form the current grounds of unbelief. If the philosophical premises are correct from which the conclusions are drawn, we shall hardly escape the conclusions themselves. But these premises, the eternity of matter and the persistence of forces, the author regards as grounded on a necessity of reason, while no competent judge, he thinks, can for a moment hesitate to accept the doctrine of evolution.* These results are indeed the legitimate outcome of the philosophy on which they rest, but that philosophy has no such firm footing as to make it wise for it to burden itself in this way with the weight of the Universe. Any argument for the being of God, so far as it is supported by the simple notion of causation, must fail, for this idea can neither expound any truly spiritual creation, nor reach the origin of any thing. It can

* Theism, p. 106.

not lead us to God, nor enable us to apprehend him should we be so fortunate as to come into his presence.

CHAPTER III.

THE ARGUMENT FOR THE BEING OF GOD IN OUTLINE.

§ 1. It should not be difficult for us to discuss with interest, yet with candor, the ultimate truths which pertain to our own being, and to every form of being by which we are surrounded. An embarrassment with which we meet, in addition to the ordinary infirmities of the human mind, is the extraordinary number of very important scientific theories which are seeking extension over a field that does not properly belong to them, and which, from their great intrinsic interest and truthfulness in certain directions, call forth ardent defence even when enlarged into universal laws. Yet if the following expression of feeling by one who is laboring to bring forward the result so profoundly to be deprecated, finds any extended response among men, it should at least carry with it a willingness to cautiously review even the earlier premises of our reasoning, that we may reach, if truth allows it, conclusions more consonant with human hopes. "And so far as the ruination of individual happiness is concerned, no one can have a more lively perception than myself of the possibly disastrous

tendency of my work. So far as I am individually concerned, the result of this analysis has been to show that, whether I regard the problem of Theism on the lower plane of strictly relative probability, or on the higher plane of purely formal considerations, it equally becomes my obvious duty to stifle all belief of the kind which I conceive to be the noblest, and to discipline my intellect with regard to this matter into an attitude of the purest scepticism. And forasmuch as I am far from being able to agree with those who affirm that the twilight doctrine of the 'new faith' is a desirable substitute for the waning splendors of 'the old,' I am not ashamed to confess that with this virtual negation of God, the universe to me has lost its soul of loveliness; and although from henceforth the precept to 'work while it is day' will doubtless but gain an intensified force from the terribly intensified meaning of the words, that 'the night cometh when no man can work;' yet when at times I think, as think at times I must, of the appalling contrast between the hallowed glory of that creed which once was mine, and the lonely mystery of existence as now I find it,—at such times I shall ever feel it impossible to avoid the sharpest pang of which my nature is susceptible." *

We hope in this discussion not to accept either in premises or in methods anything unscientific, but we have no wish and no expectation to commend our results to those who judge the scientific and the unscientific by a narrow empiricism. The errors and darkness into which we have fallen, have arisen

* Theism, p. 114.

from a very limited induction, subsequently extended by a very sweeping deduction. We shall regard the facts of mind—as they lie within experience open to rational statement and analysis—as possessed of the same scientific value as those of matter, and quite as capable of a legitimate enlargement by deduction into laws of the universe. The two methods issuing in theism and atheism, separate very early in their statement of the facts of matter and mind. The one method with a wiser and more truly scientific induction, as we think, interprets mind by mind, and so establishes two planes of law. The other occupies itself with matter and surreptitiously carries over its laws to mind, and so issues in the loss of the chief constructive element in the universe. While stating as concisely as possible the contrasted laws of matter and mind, and avoiding as far as possible psychological discussions, we must none the less bring freshly before us these preliminary truths. Argument in the face of the sweeping assumptions of the so-called "scientific method" is quite impossible.

§ 2. From the notion of causation, guided and confirmed by experience in the physical world, there arise three conclusions, all of them exceedingly influential in an ultimate philosophy. The first is the indestructibility of matter and force. These two—matter and force—are the complete expression of causal energies in the world, and neither of them can be diminished or increased in harmony with this law. They may pass through many modifica-

tions, but in their own circuits, under their own units of measurement, they remain the same. The static energies of material things, as expressed in weight, no matter how often modified in form by new combinations, and the dynamic energies of forces, as shown by units of work, no matter through what diverse stages of activity they may pass, remain the same, and may be returned to their first expression.

A second conclusion, which is hardly more than an extension of the first conclusion, is the eternity of matter and force, or the eternity of static and dynamic energies. For the same reason that the universe of to-day is that of yesterday and of the day before, it is also the universe of any period, no matter how remote. The laws of nature do not expire by limitation. The facts of to-day in substance are identical with those of a thousand years since under this simple principle of causation.

A third conclusion equally certain is that of evolution in its direct form. Grant the universal application of the law of causation, and all subsequent modifications of effects are the products of antecedent causes, no matter how obscure and complicated the connectives or unexpected the appearances. The law never lets up, and the obscurities of its transitions are simple obscurities, nothing more. The principle being granted as universal, the conclusion is inevitable. Any apparent escape from it is simply the vacillation of the eye unable to follow the light.

The more boldly and the more baldly these con-

clusions are stated and recognized the better, since we shall thus see the more quickly how much too narrow they are for the exposition of the Universe of which man is a part. Let Empirical Philosophy hasten to its logical results, for these are its overthrow. It is hardly necessary to say that evolution must exclude final causes. Efficient causes, existing as eternal forces, control all things. The energies of the Universe, like those of a torrent, come pouring out of the past and simply spread out and over the future as an open field. Guidance, direction, shaping conditions of all sorts are already within them. They neither call for nor are capable of any modification toward any end whatever. "The argument from a proximate teleology must be regarded as no longer having any rational existence."* The mind that would grasp the truth should look steadfastly at these all embracing, invisible forces, till a sense of their supreme energy has settled deeply into it, till the ghostly shadows of human liberty and human powers have glided away like a dream, and till the too volatile and sanguine thoughts have accepted these facts of the world stamped upon them and burned into them like a brand. The vagrancy of the mind, its illogical combination of inconsistent views, are the causes which delay the decision of these ultimate questions. Men would extinguish more reluctantly the light of their own spiritual nature, did they not secretly believe that they could relight it again at pleasure for their own ends.

A universe of this sort, that is seen to be what it

* Theism, p. 106.

logically is, simple forces flowing out of eternity into eternity, in which human hopes and human efforts—the whole spiritual world in its thought and affections—are deceptive shadows of physical things, can offer no such solution of the problems of the Universe to one who has accepted the injunction, "Know thyself," as to preclude a fresh opening of the entire question.

§ 3. If the law of causation is as broad as it is thought to be, theistic arguments are certainly ill taken, but this is by no means the sum of our loss; it is only one feature in a general shipwreck. The entire nature of man, his moral, intellectual and productive action in the world are so profoundly modified that it is impossible for him to explain in any direction the most familiar experience. The energy of every effort gives way, the light of every hope fades out. The spiritual kingdom—the correlative kingdom to that of purely physical facts—has been by far too much narrowed in statement by the prominence given to the freedom of the will. No one power can act on a plane quite by itself and retain efficiency or carry with it conviction. This power must be sustained and enlarged by many kindred powers and give the mind the ground for its comprehension by many and extended analogies. There is an entire kingdom overlying the physical kingdom, in which the law of causation is replaced by that of spontaneous power.

Words are ill-defined in this direction, and greatly aid the confusion of thought. On the one side are cause and effect, implying measured physical forces;

on the other, agent and action, involving power strictly potential. While an agent in the higher meaning of the word performs an action by a mediation of physical forces, the combining spiritual element in the action is referable finally to the agent himself. The action may appear in the external world or it may remain in the intellectual world, being simply associated in an inscrutable way with obscure nervous activities, but in either case the peculiar guiding element is not the product of causation. This energy of combination and direction, which is not itself a physical force, but operative in these forces and through them, we term spontaneity. The words cause and causation have indeed traveled all through the realm of superphysical activity to the confusion if not to the oversight in the thoughts of man of these cardinal distinctions. A man is a cause of his thoughts and actions in quite another sense from that in which a rain is a cause of a freshet.

One of the earliest forms in which this new, this plastic power appears is life. Life is a combining element. It uses many physical forces; it cannot take its place as one among them, nor is it simply another name for them. Physical forces, and this is a cardinal fact in causation, have a fully realized existence, definite directions and modes of action, fixed relations to matter. Though they may pass in expression from form to form, they ever have some form, locality, relation. While we cannot as yet perfectly define all the forces which appear in the action of a living thing, as a tree, these forces

have doubtless specific methods of existence and definable physical dependencies. Such distinctly related activities are what we mean by forces. Life itself can not be any one of these forces, since no definite force among forces can combine and use all forces. In so doing it would disappear as one force and reappear as all forces. It is not another force that is called for, but a plastic power over forces, using them under certain laws for certain ends.

We may with Huxley deny the existence of life. We may affirm that vitality is no more called for to account for living things, each in its order, than aquosity is called for to explain the properties of water. But the assertion seems to be made simply because of the inscrutable character of life, and not because there are here no peculiar phenomena that require explanation. The living thing is a very peculiar thing, and that peculiarity lies not so much in new forces as in their new and variable combinations. We can not, as in the case of iron, air, water, define the properties involved, and thereby exhaust the problem. This would be to overlook the very thing that invited our attention, to wit, the changing relations of the forces within themselves. If we deny life as a separate something, what is the result? The living thing is no more than the dead thing; the living man than the dead man. Different forms of life involve no distinct principles. Protoplasm expresses nothing more than organic matter, and man nothing more than protoplasm. We cannot speak of the law of

inheritance, for there is nothing to be inherited. Water and air pass nothing by inheritance. Plainly, then, life in its many forms is a necessity of thought; we cannot discuss living things without it. But life can neither be one physical force nor all physical forces, for either view leaves out its true function of combination. It must be a plastic power which expresses itself in and through many physical forces, otherwise independent of it. Herein it is allied to mind.

Do these plastic powers come under the law of causation? We think not. (1) They have none of the characteristics of specific forces. They are not realized in direction, position, form, volume. They can not, therefore, drop into place among forces under the law of correlation. (2) The specific forms of activity within the living body may be defined, while life itself remains undefined. After every specific force has been deducted, and the whole interplay of causation been exhausted, life remains as something not included in the estimate. (3) Life obviously does not conform in its propagation to simple causation. One acorn may be the source of a million acorns, having the same efficiency with itself. A million acorns may perish and leave behind them no residuum of forces referable to the life in them. No expression in force has been obtained for the plastic power of life, nor is it conceivable that there should be, since no distinct measurable force could do the infinitely varied work expressed by vitality. (4) This plastic power is transmissible and modifiable in descent in a way

quite peculiar. Physical forces subject to causation are capable indeed of many combinations, but they return readily in a simple way to their first terms. In life the first term is often entirely lost in evolution, and the several stages and terms can be approached no otherwise than through the laws of variation and inheritance which first produced them, if indeed they can be reached at all. These laws are laws quite peculiar to living things, and receive no sufficient explanation under causal dependencies. We cannot divide and compound plastic powers, nor express their action by additions and subtractions, as if they were a simple congeries of physical forces. The facts are peculiar and the laws are peculiar. No definable causes cover them. The belief that they do is not an induction, it is simply the momentum of an induction in one field expended in another field.

We might indeed be tempted to attribute this difficulty in the comprehension of life under the laws of causation to the obscurity of the terms, did not the problem assume a new and more pronounced form when we pass on to consciousness, and so up to mental processes. By the growth of the new tendencies, we see at once that we are not merely on the bounds of the old kingdom, but have entered within the limits of a new one.

§ 4. It is impossible to tell how low down in animal life the simplest facts of consciousness arise. We are more likely to refer them to an origin too early than one too late, since the external appearance of actions ordered instinctively are quite the

same with that due to a conscious experience. Plainly such an experience, no matter how low it may penetrate, plays no important part except in the higher animals. The first terms of consciousness are sensations and memory. Sensations when varied are combined by memory into an experience, which becomes a new and influential term in action. But conscious states from their very origin are not explicable under the laws of causation. An activity of the nervous system accompanies them it is true, but we have no known way, or hint of a way, by which states of consciousness, as expressions of forces, can be dropped in as definable terms in this circuit of physical action. Physical states flow into physical states, and there is no break between them, no room for the insertion of a new spiritual efficiency contained in the terms of consciousness. We might as well look for noumena wedged in between phenomena. If we could trace exactly the entire series of effects by which stimuli, received at the senses, pass through the nervous system, and, with the presence of conscious states, return as modifications of the muscles, we have no reason to suppose that the series would present itself otherwise than as a succession of purely physical facts. We can conceive—and here the word is in order, for we are speaking of that which is phenomenal—of no form of physical action intervening at any point in the circuit which would offer itself as a conscious state, or even as the physical representative of such a state. We have no proof of the existence of any force which is the force of a state in consciousness. The

phenomena of consciousness seem to be supernumerary to the physical forces to whose activity they are incident. We know not how a physical fact is converted into a conscious state, as for example the condition of our affairs into our thoughts about them; nor how the inner state reappears in the outer action, as the plan of yesterday in the exertion of to-day. A mind-force, both in its mode of existence and in its transfer, is unintelligible, an assertion beyond any proof or any hint yet offered by experience. The only way in which such a force can be inserted in the continuous series of physical effects incident to nervous activity is by assuming the identity of a feeling or a thought with one or others of these physical effects already present. This assumption is so far from being an explanation, that it is in itself quite unintelligible, and leaves the physical facts untouched in their interior completeness. As far as comprehension is concerned, we might as well affirm that the attendant conscious state is the pin which pricks us, as that it is the molecular changes induced by the pin. It is not experience at this point that confirms the principle of causation, it is the purely *a priori* force of the principle which is allowed to crowd upon us an explanation so inapt of the terms of experience. When the limits of the physical kingdom are reached, forces, and with them causation, disappear. All the affirmation that experience, in a case like this, entitles us to is that of an inscrutable connection between two series of facts, a mental and a physical one, each apparently complete within itself, and

subject to its own laws of sequence. The physical circuit has fully expressed itself in every stage as some form of motion or combination, the intellectual circuit as some form of feeling or thought or volition, realized in consciousness by virtue of a mental power, and united in conduct by a rational law. The pin-prick may be endured with composure or resented with anger, according to the terms of the consciousness into which it is received.

§ 5. This brings us to the great central fact in the interpretation of the universe, the laws of thought. These are not the laws of matter, nor the shadow of those laws. They are something as primitive as those laws, nay, more primitive. They are distinct principles of connection between most distinct phenomena. As the proof for the being of God can be successfully pursued only under the Intuitive Philosophy, the argument is properly entitled to the support of all the principles of that philosophy. No intuitive process can proceed without guiding ideas, and these ideas, therefore, as those of identity, sameness, causation, are antecedent to the experience they illuminate. It is the mind that brings comprehension to things, not things that light up the mind with comprehension. This is seen in the completeness and certainty of the convictions which underlie experience. The equalities of mathematics are absolute equalities. Its units are exactly commensurate with each other. Its circles are perfect circles. Its lines are without error, and require no interpretation of experience to define their relations to each other. Not one in a thousand causes has

been measured in its effects by man, and these measurements have rarely been definite enough to establish any exact equivalence. Yet the notion of causation, present as a term of interpretation quite interior to all phenomena, affirms itself as an exact and universal law of the physical world. It brings its own force to the nine hundred and ninety-nine facts, it does not derive it from them. The mental conceptions quite transcend in completeness the physical experiences to which they apply,—or the mind's knowledge of those facts—and are often coherently developed, as in geometry and logic, far in advance of physical inquiry. Nor have these truths been the slow deposit of the mass of minds under protracted experience, but a sudden uplift of thought in a few, dimly shared, if shared at all, by the many. The completeness and necessity of these mental ideas and laws quite distinguish them from the products of experience, from that knowledge which arises certainly and manifestly as the result of an inquiry into things. We can not fail to see that there is a wide difference between the proofs of geometry and the conclusions arrived at in practical engineering. Nor has the Empirical Philosophy been able either to soften or explain this distinction. The clearness of the one movement remains attributable to its purely mental character, the obscurity of the other to its dependence on the senses, to its relation to facts. Facts at once cut down the mental light.

No less distinct are the connections of judgments from the connections of facts. Thoughts cohere in

one way, things in another. The laws of deduction —and the same is true of induction, so far as induction is simple reasoning—are most freely applied when the terms, as indicating particular things, are overlooked. The laws of the syllogism need no illustration in things. They are not to be aided by object-teaching. Indeed, they begin to limp at once in their application to actual objects, because of the imperfection of our knowledge as dependent on observation. Things are united by causal relations. These are the only relations which make one event follow another—which connect antecedent and subsequent states of brain with each other. The mental connections of equality, identity, likeness, have no force in matter, save through causation. They do not determine the real dependencies of things. Strive to identify those laws of thought by which conclusions arise from premises, both being held before the mind under pure mental vision, with causation, and what is the result? States of brain follow each other causally; that causal dependence is assumed to be the basis of the laws of thought. There is in this assertion not only no explanation, it is itself wholly incomprehensible. That an efficiency between physical facts—an efficiency which the eye can not reach, but which is itself a product of mental insight—becomes an inner law of thought, is an assertion equally beyond the scope of experience and reason. It is one which finds no basis either in clear induction or deduction. Farther, it is an assertion at once self-destructive. If the combinations of thought are identical with

the causal relations which lie between physical facts, then, since all sequences are equally real, all thoughts must be equally true. A physical effect always involves a sufficient cause, and so the distinction of true and untrue does not lie between facts as facts. The only division here is into actual and imaginary. No more, therefore, could this distinction of true and untrue hold between conclusions, if conclusions express simple physical sequences. Everything that is has a sufficient cause and is real, everything that is not has no cause and is not real. Here is an end. The division of truth and falsehood lapses into that of being and not being. The assertion, therefore, that mental connections are in any way the counterparts of physical ones is self-destructive, since it sweeps away the very distinction involved in itself, to wit, that of the true and the false. One set of conclusions is one series of effects in one type of brain, another set is another series in a second type of brain, and any comparison between them a third series by itself, while all three as facts are equally real and equally akin to a true mental process.

Another law of mind is expressed in final causes. Efficient causes belong to matter. Here they assume that exact expression and permanent form which make them manageable terms to mind. Final causes, on the other hand, pertain exclusively to mind. They are the accompaniment of its forecast. History, human action, cannot be explained without these shaping purposes, which constitute the distinctive features of rational life. An effort to write history without them would be absurdly

ineffectual. The fixedness of efficient causes and the flexibility of final ones are first terms in human history. The effort to exclude final causes from physical inquiries is simply an effort to exclude mind as a primary element from the universe. If it were successful, we should find no repetition in the Universe as a whole of those conditions which characterize the highest portions of it. We must indeed freely admit that a hasty assertion of final causes has tended to limit and to exclude most needful inquiries into efficient causes, and so greatly to belittle the whole conception of the world. Science has not therefore without grave reason found itself inimical to final causes, and to the wholly inadequate explanations that have sprung from them. But error rarely belongs to one side only. It must be guarded against on both sides.

Very remote and comprehensive ends, when sought by general laws, necessarily give great prominence to efficient causes, and exclude the idea that each incident of the general movement can be made a subject of distinct decree aside from its relation to the whole. The interior inquiry, in such a system, will be primarily one of efficient causes, while the exterior one, penetrating however to the heart of the whole, will have reference to final causes. The distinction of means and ends must hold if the universe is in any way the product of mind. Nothing but an arbitrary judgment can antecedently settle this question against mind, and relegate the universe to matter alone. When we look broadly at the facts of the Universe, and find them to be

concurrent and constructive, marvelously so, we have the same rational right to recognize that fact and emphasize it, that we have to observe and explain any other fact, the most physical. The presence of such constructive relations in the Universe is the subject of inquiry offered to Natural Theology, and no antecedent principle either of science or of philosophy is opposed to it. The presumptions lie in quite the opposite direction. Final causes play a most important part in human action. As this action is the highest type the world offers, it would be strange indeed if it gave no principle serviceable in our ultimate problems. This feeling against final causes is ultimately rooted in the hasty conviction, that matter not mind gives the key of the world. The practical principles are that we are to exercise caution in the introduction of final causes into a cosmical philosophy, and that these causes are to be expounded constantly in connection with the efficient causes which are included in them. The immediate explanation is in these, the remote and more inclusive one in those.

A last peculiar law of mind, which is only the latest product and expression of the laws now referred to, is that of liberty. We shall not revive a discussion of which the world is somewhat weary. We have done elsewhere what we could to clear up its difficulties. The notion of liberty has suffered very much from a treatment too isolated. This is not a single distinct power unallied to other powers and unsupported by them. It is only the highest expression of that spontaneous power which belongs

to all thought. If the moral world can not be expounded without liberty, neither can the intellectual world without spontaneity, that power of mind which reaches and justifies its own conclusions.

We readily admit that we can do nothing in Natural Theology if these fundamental convictions of the mind are not legitimate. Yet the fact matters little. Having lost intelligent thought, having lost responsible action, having lost ourselves, it is quite of course that we have also lost God. If we are drowned in the sea, the sun will go out in darkness.

Very many arguments made for the being of God, like those of Paley, mingle the ideas of causation and spontaneity in a way very obscure, and true to neither of the two conceptions: they therefore hold, and do not hold. They hold, at least in part, if we grant them a liberally corrected construction; they do not hold, if we press them closely under the obscure language and contradictory notions they involve. Taking to ourselves with a firm hand and clear assertion the powers and laws of mind as fully correlative with the forces and laws of matter, how does the argument stand? What is the most rational solution of the problem offered by the universe?

§ 6. To bind ourselves closely to the purely formal conditions of an experience which has arisen within the limitations of a finite existence, and to attempt by these terms alone to interpret the Infinite is plainly absurd. This would be to prove the properties of a transcendental curve by actual measure-

ments. The inquiry must be made more broadly, more rationally, more truly under its own conditions. The question is not this, Do we, as a sensible fact, within the circuit of our observation, find mind prior to matter? but this, Do the laws of matter impose themselves on mind, or does mind under its own laws lay hold of and employ those of matter? If the order we find in thoughts and feelings is induced in them by physical causation, then in this direction lies all the coherence of the world; but if thought and feeling, with laws of their own, work their own ends through the laws of matter, then the coherence of the world is that of reason. If we are to determine the fitness of matter or of mind to be an ultimate term, the mere time-sequence in our own period goes for very little. It would be quite preposterous to say that a personal God must have created mind before matter. On the other hand, it is quite plain that finite mind being subject to the most complicated dependencies on matter, must appear subsequently to it, and largely subject to it, in a rational creation. The relation of guidance between mind and matter, is on the other hand, the truly significant term; it is this which discloses ultimate relations. The boat precedes the boatman, nor can it be steered beyond the water; none the less the boatman explains the boat.

The spontaneity of mind avails to free it from the direct control of matter, while the causal dependencies of things only put them the more completely under the guidance of reason. The control of mind by physical conditions is insanity, is madness; the

control of matter by mind is sanity, is rationality. We find it, then, to be the significant characteristic of our human experience, that which imparts to it its value, that mind is not subject to the laws of matter, but that matter, through its laws, is subject to mind and increasingly so ; that mind is perpetually transferring to it its own conceptions, and reaching through it its own ends. This cardinal relation we may carry with us as clear light in an inquiry into the ultimate dependencies of the two terms. As the arrangements and proportions of a house are the products of mind, it becomes only a rational extension of the explanation to suppose that the arrangements and proportions of the world are, in a more profound way, also the products of mind. It becomes very certain to us that mind itself is not, in any way, the result of these very arrangements and proportions.

" If the mere existence of Mind is supposed to require, as a necessary antecedent, another mind greater and more powerful, the difficulty is not removed by going one step back ; the creating mind stands as much in need of another mind to be the source of its existence as the created mind. Be it remembered that we have no direct knowledge (at least apart from Revelation) of a mind which is even apparently eternal, as Force and Matter are! An eternal mind is, as far as the present argument is concerned, a simple hypothesis to account for the minds which we know to exist. Now it is essential to an hypothesis that, if admitted, it should at least remove the difficulty and account for the facts. But

it does not account for mind to refer our mind to a prior mind for its origin. The problem remains unsolved, nay, rather increased." *

"Mind can only be caused by mind, and, therefore, mind must either be uncaused or caused by a creating mind. Where is our warrant for making this assertion? Where is the proof that nothing can have caused a mind except another mind? Answer to this question there is none. For aught that we can ever know to the contrary, anything within the whole range of the Possible may be competent to produce a self-conscious intelligence—and to assume that mind is so far an entity *sui generis*, that it must either be self-existing or derived from another mind which is self-existing, is merely to beg the whole question as to the being of God." †

We have here two difficulties put by Mr. Mill and by the author of Theism. The first is that mind can not be put back of mind in explanation of it. If mind can not be assigned this ultimate position, certainly matter can not be; for causation in the physical world leads us to no first cause. We are thus cut off from any explanation of the universe. All that we can say of it is, that it offers itself to us as an eternal coming and going, with no ultimate source or rational end. This statement is merely the counterpart of the phenomena as they present themselves to the senses; it meets the mind neither with ultimate causes nor ultimate reasons. Causation, either efficient or final, is without a goal; the inquiries with which we interest ourselves so

* Theism, p. 12.

† Ibid, p. 14.

zealously are finally abortive and expire in darkness. We pursue the butterfly, but the butterfly escapes us, and leaves us only our fatigue.

Whether we can or can not reach a beginning in reference to the present universe turns on the question, whether we can or can not rationally entertain the idea of a truly Infinite Being. The infinity of God makes it unnecessary and irrational to put back of him any farther being either as mind or as matter. Such a retrogression would destroy the conception. The possibility of ultimate explanation, then, resolves itself into the inquiry, whether either matter or mind offers the conditions of a true Infinite. Plainly matter does not. It is, in every phase of it, a realized finite existence, as definite and measured in all its immense dimensions as if it were confined to the earth alone. But mind may give the requisite conception for an Infinite Being, offering as it does the two necessary elements of spontaneity—the power of origination, and potentiality—an unmeasured reserve of power. If we put this conception of infinite mind, which we rationally may do, back of the universe, we have reached a beginning and a Supreme Personal Potency, to whom all ways are open. We have no occasion to go further than this. We cannot rationally go further than this, since this conception is the proper balance and equivalent of the universe, of which it itself is no part. The mind can rest in these two ideas as readily as, in a narrower relation, it rests in the notions of cause and effect,or of rational action and rational motive.

The second difficulty stated is, that we have no more warrant under experience for affirming mind to be the source of matter than we have for affirming that matter is the source of mind. "In whatever degree it is unthinkable that matter should be the cause of mind, in that precise degree must it be unthinkable that mind was ever the cause of matter, the correlatives being in each case the same, and experience affording no evidence of causality in either." *

This assertion may be true enough if we confine ourselves to the imagination, for causation in neither direction and in no direction is conceivable. It does not seem to be true under a rationally interpreted experience, for these reasons: (1) Mind can begin an action, matter cannot. This is a point already settled by our psychology. (2) If mind has sprung from matter, it must either have existed in matter in an inchoate, incomprehensible way from all eternity or itself be simply a peculiar compound of matter. There is nothing in our experience to confirm either supposition. If matter has sprung from mind, it is a fact perfectly in accordance with the fact, pitched to a lower key, that matter is daily receiving modifications directly traceable to mind as an ultimate source. The very gist of mind, to wit, thought-relations, are inserted in matter; the very gist of matter, to wit, physical properties, never appear in mind. (3) Unless we confound mind and matter hopelessly, the proportions and combinations everywhere present in matter cannot be explained if matter be ultimate, and are at once explained if mind be ultimate. (4) All that

* Ibid, p. 17.

in mind which makes it to be other than matter, more and higher than it, is unintelligible, if mind lies back of mind; but is intelligible under the equivalence of causes and effects, if matter is the source of mind. The distinction between the two must be ultimately lost by such a reference, and is being daily obscured by it. Our first term of knowledge, an intelligent mind, thus sinks again in the confusion and chaos of all things. This result is clearly reached by the authors referred to. "Science, by establishing the doctrine of the persistence of force and the indestructibility of matter, has effectually disproved the hypothesis that the presence of law in nature is of itself sufficient to prove the existence of an intelligent Law-giver.*" What is this but saying that no amount of order and no relations can disclose mind, or are at all inconsistent with a reference of all things to matter. The phenomena of mind, as interpreted by human experience, thus cease to declare mind, and are made to declare matter. The indestructibility of matter and the persistence of energy within a finite field are quite other things than the eternity of either matter or energy. The first might be an ordination of mind; the second could not be. The author has assumed the equivalence of the two statements.

"Science, indeed, has proved that if there is a divine mind in nature, and if by the hypothesis such a mind exerts any causative influence on the phenomena of nature, such influence is exerted beyond the sphere of experience." †

* Ibid, p. 75.

† Ibid, p. 74.

These assertions presuppose so false a conception of the action of mind in the world, and consequently so strong a presumption against its presence, as to prejudge any argument in favor of creative power. The grounds of this presumption are two, that we do not in our own experience directly discern the presence of God, and that energy is indestructible. Both of these reasons involve an empirical philosophy in so narrow a form as to render all effort for an ultimate interpretation of the world hopeless on its very face. A truer psychology prepares us to accept the order of the world as the immediate phenomenal presentation of God's presence; while the perpetuity of the energies through which it is expressed is a law established within them for a creative purpose, a law by which they accept, and not one by which they cast off, the divine thought. Precisely thus the physical powers of the human body are under the law of correlation, but are not thereby removed from the immediate control of the human spirit. Order and control are correlatives; if there is no order, there are no conditions of government. Nor are we confined simply to the use of our bodies when made; we can through the laws of inheritance—by the very means by which we work them—do much to make the bodies of coming generations what we wish them to be. Give these facts of experience the expansion which properly belongs to them—by which they are presented as premises of the reason, rather than as the ultimate facts of the senses—when carried over to the interpretation of the Infinite, and God abides in the midst of all

physical energies, while these laws are the immediate expression of his constructive thought. The strength and beauty of the world have not retired further and further, till they have lost themselves as irrational results in an irrational source; thought and force alike have centered themselves in a harmonious and profound way, in the true omnipresence of God.

We cannot pursue further to advantage in so general a form the relations of matter and mind. They will be more distinctly seen in each branch of the discussion. There is, however, an interesting item, even in our narrow experience narrowly expounded, which seems to have been overlooked in the implication that mind can as readily be referred for its origin to matter as to mind. It is true, if strict evolution is established, that mind is ultimately derived from matter, but evolution is not established. The item to which reference is had, is the fact, that all life and each form of life springs from life like unto itself. This is a universal law. The balance of proof still carries it unbroken down to the lowest forms of life. This great law of experience, that like begets like, applied to the discussion before us means, that mind begets mind. To affirm that matter, outside the range of experience, produces mind, is to allow the unknown to contradict fundamentally the known, is to say that we have one law in the universe and another in the construction of the universe, is to allow empirical philosophy to set aside experience.

§ 7. We believe then, that the first spontaneous

interpretation of the universe by the human mind, though often narrow in form, false in details, and wavering in conviction, is the correct one, and contains the germ of a growing argument for the being of God. It springs from the immediate estimate mind makes of itself, of matter, and of the relations between the two. This argument will remain good so long as the essential soundness of the mind's judgment of itself shall be recognized. It is a very direct proof, a very spontaneous interpretation, but one which turns on the universal consciousness, the habitual rendering of mind by mind, its apprehension of its true equivalence in the world.

Mind alone within the compass of our experience gives us a true beginning of any line of action; mind alone is spontaneous. It is mind that shapes matter, that uses it as an instrument for its own ends. It is mind alone that acts under final causes; matter has no ends in view, is subject to no motives. While matter as the instrument of mind partially conditions mind, it does it by inertia, by a fixed nature, that seeks nothing for itself, and submits itself without concurrence or resistance to the hand that wields it. No new order, no thought, no arrangement for a fresh purpose, appear in matter within the circuit of human experience except through the intervention of mind; while in this form they arise momentarily. Mind, therefore, presents itself with a sovereignty over the physical world, while the physical world lies fixed in its order. Hence the easy, natural, inevitable inference of one Supreme Mind, when human thought strives to rise beyond its immediate

experience and explain the phenomena of the world on a broader field. Mind is still regarded as the exclusive source of change, of thoughtful relations, of order instituted for an end. The laws that are in matter act with no more power of redirection or self-modification than belongs to the stones set in a building. They seem simply to preserve a fixed relation to a constructive service that has been put upon them by mind.

Mind also offers in its potentiality an available infinite. Infinite matter would be a plenum and admit no change, would exclude all modification, creation, evolution. All that empiricism charges on the notion of the infinite we admit as applied to matter. But mind may remain an unmeasured potentiality from which the finite may flow in perpetual expression.

Thus between the two terms, mind and matter, mind alone offers the spontaneous, creative, combining power which permits it to furnish an ultimate explanation to the Universe; mind alone can abide in that unwearied productiveness which offers a final term to human thought. No matter with what material terms we start, we reach no beginning. The whole problem is still in them entire and untouched at every stage. We ask without answer for the origin of things. A change of forms, but no change of forces is possible. All movement backward and forward expires by the slow retardation of weariness with no suggestion of any bounds. All thought thus becomes at length the unsolaced travel of a tread-mill, in which work is

endless but no progress is made. Infinite mind on the other hand can begin and carry forward the universe, while itself so full a term as to give exhaustive explanation of all that takes place by its action; it is also a term of such a nature as to raise no new problems corresponding to those it solves. A true infinite neither calls for nor admits a finite or an infinite back of it.

The mind of man is so made, reason is of such a nature as to rest in reasons. An effect, troublesome to thought in itself, is satisfactory to thought when united to its cause; action inexplicable without a motive is at once balanced by a sufficient motive, and intellectual equilibrium is restored to contemplation. The finite in matter and mind is unpoised till the infinite in mind is set over against it. Then the reposeful motion of thought in its proper orbit springs up once more under the double impulse. The ultimate poise of mind is achieved by this action between correlative ideas, as the bird moves and rests on opposing wings.

§ 8. The argument for the being of God, far-reaching as it is in its conclusions, is yet very direct and simple and sustained by manifold deductions and inductions. It cannot be subverted without a subversion of those first truths of philosophy on which it rests. This foundation giving way, we abandon at once the tumbling superstructure. But so long as men hold to their primitive interpretation of the powers of mind and those of matter, they will inevitably look to mental powers for an explanation of the order and beauty of the world.

Yet narrow objections may be taken. It may be said that we have no experience under which mind creates one atom of matter or one unit of energy. Grant it; this fact does not obscure the fact that the mind of man is constantly in an inscrutable way using the substances and energies already in existence and freely introducing among them its own purposes. If the power to use forces belongs to finite mind, the kindred power of creating them can hardly be withheld from Infinite Mind. Finiteness affects the terms in magnitude, but does not disguise the essential relation between matter and mind. Matter does not, can not, in the presence of the human mind preserve its integrity, keep itself intact. In secret fashion the mind finds way among its forces and employs them as truly as if it created them. To insist, as a condition of validity in this great argument, that man should create matter as well as control it, is to be confused by the letter of our finite limitations, rather than instructed by their spirit and power. Of course the Infinite can not be measured by the finite; the finite is but its shadow and must lack somewhat of its substance. We are not to force our argument to travel on all fours. If it were shown that man did create force, the objector might still urge that he should be shown to create force indefinitely.

The argument is debased and quizzed when the inquiry is made: Where is the brain of God? Brain is a medium of communication between matter and mind in their finite forms; mind, introduced into a physical universe foreign to itself, is united to it by

a nervous system. Thus it has control without creation. When we are to take an ultimate position, to reach an all-comprehensive idea, we must allow the rational process to complete itself under its own law. Not to do this is to insist on seeing the sun without looking up.

§ 9. The simple yet multiform argument for the being of God has been chiefly fortified in the past by striking examples of special adaptations. These instances do not essentially affect the logical force of the proof; they serve simply to impress it on the mind; they concentrate the light afresh upon its data. They are not, therefore, without popular value, though of secondary theoretical worth. The progress of science has served to render these illustrations unnecessary, and greatly to modify their logical force. The world is far too full of laws to make an extended presentation of this fact needful. If God is at all present, he is pervasively present; if his being is to be proved, it is proved not by one or a hundred special contrivances, but by a wisdom that is absolutely world-wide.

While, therefore, our argument may occasionally seek the emphasis of striking relations, it will have far more to do with the fundamental laws of the world, and their ultimate reference whether to matter or mind. The amount of constructive energy in the universe has passed beyond dispute and beyond presentation; the only question that remains is, What is its seat, what its source? The argument alters its character somewhat in each of the great fields of inquiry, and we must therefore consider it

separately in the inorganic, the organic, and the spiritual world. The eternity of matter and energy is the first postulate of atheism, and its second postulate, evolution. These two logically cover the discussion, and must be met distinctly in each stage of procedure.

CHAPTER IV.

PROOF OF THE BEING OF GOD IN THE INORGANIC WORLD.

§ 1. SOME have thought that theism is not greatly affected by the supposition of the eternity of matter and energy. Others, more sagacious, have seen that this supposition, supported by that of evolution, excludes all sufficient proof of the being of God. "That the argument from General Laws is a futile argument is no longer a matter of unverifiable opinion; it is as sure as the most fundamental axiom of science. That the argument will long remain in illogical minds, I doubt not; but that it is from henceforth quite inadmissible in accurate thinking, there can be no doubt." * Granting the eternity of matter, and of the forms that gather about it, "every change or event of evolution is *necessarily bound* to ensue, else force and matter have not been persistent." † The conclusion is unavoidable. If matter is eternal, so also are the properties, laws and relations of matter; and thus its constructive work in the universe is completely provided for. Up to the point of the appearance of life nothing remains

* Theism, p. 53.

† Ibid, p. 54.

to be done, and at this point evolution steps in to bridge the gulf that is only apparent, not real—and the last data from which to argue the divine existence disappear. If God were present in a universe whose material is eternal and instinct with order, there would be nothing for him to do, nothing subject to his disposal. Unless we chose in thought to assign him mechanical tasks, like a workman, in an outside moving hither and thither of matter, matter being given in its properties, all true construction is provided for. Any other product would be an edifice, something put together with tools, its parts fitted and lifted to their places. The position thus provided for God in the universe would be as much opposed to reason as to experience. Being excluded from any interior control by its independent and persistent properties, he must remain an idle spectator; he could only tug and strain at it like a laborer, in a most superfluous way, against the sweep of composite energies carrying it on in its creative work in a truly divine fashion. The full exposition of physical laws, as grounded in the very nature of matter, excludes any divine power which is not expressed in and through them. Science is constantly subserving this great purpose; it compels us to reshape our conceptions of the divine nature, and give them more fulness and proportion. The divine wisdom must remain the substratum of all things, or, once lifted to the surface, it disappears altogether.

The first question, therefore, in time and in importance to be raised and settled in a discussion of

Natural Theology is the relation of mind and matter, and their order of precedence. If matter comes before mind, then the germs of the universe must be sought for in it. If matter and mind are both eternal, then our system is dualistic, and we have neither in matter nor mind a true infinite, a divine potency; nor in them collectively the promise of any harmony. In such a relation matter, in its stubborn eternity, its unbending persistency, must hopelessly weary the comparatively superficial activities of mind. The mind finds neither rational rest nor rational hope in such a conception. If mind alone is eternal, it can enfold all things, and bear them all forward to its own ends.

So true to human thought is this ultimate dependence of matter on mind, that those who deny the eternity of mind, begin at once by a subtile compensation to break down the distinction between mind and matter, and carry what they term intelligence far back into the physical kingdom. Having denied to mind its proper work, they assign that work to simply physical and organic activities as seats of an "unconscious or supra-conscious intelligence." They are thus able to retain a verbal explanation of the chief fact of the universe, its pervasive order. Locke, who did so much to originate the modern empirical movement, and yet, if he had anticipated it, would have drawn back from so many of its conclusions, raised this very inquiry, whether matter may not think. Intelligence being indispensable, matter, in a wholly obscure way, is made to absorb it into its very substance. The theory is wholly in-

admissible. (1) It contradicts narrowly and broadly, superficially and profoundly, that very experience on which the Empirical Philosophy is built. We know nothing of intelligence separated from consciousness, any more than of physical properties separated from space. It is a statement so alien to our knowledge, that mere matter is intelligent, as to be wholly unintelligible to us. (2) Intelligence must forecast its ends, or we have so far reduced the meaning of the word as to destroy the power of the idea to expound a world whose chief feature is, that results and relations of the broadest sweep are provided for. That which does not foresee cannot explain complicated, complete and remote correspondences. (3) If unconscious intelligence suffices to explain universal law as present in the world, it must not merely equal but far transcend the later conscious intelligence of mind. Evolution has not been, therefore, an expansion but a steady reduction of intelligence. It has lifted it from the heart of things, and made of it a comparatively superficial play upon their surface. Matter, so-called, is a seat of a much grander intelligence than mind, so-called. (4) This philosophy simply confounds matter and mind with a loss of the first principles of comprehension.

§ 2. We first consider then the proof of the eternal precedence of mind. The world of intelligence —that is, the world of perceptions, conceptions, ideas, in which the mind moves—is the first world to every rational spirit, and the world through which alone a second world of outward and physical facts is reached. The first world is the mirror in whose

reflection we see the second world, and the second world always remains to the mind rendered in form and given in relations by the mind's constructive faculties. While, therefore, the physical world as a simple, uncomprehended fact goes before each finite mind, awakening that mind to activity, the actual and partially comprehensible world in which each mind moves is built up under its own perceptions, and harmonized by its own ideas. The mind is thus in a very important sense the fabricator of its own universe, as the reader renders anew the idea, and does not take it mechanically from the symbols of the page before him.

Perceptions as of taste, odor, sound and color, with which we habilitate the frame-work of matter, have in them a purely subjective element. Sound is not in the air, but in the ear that hears; color is not spread as a tent in the sky, nor as a covering over the plain; it is a transfiguration, by the mind, through the medium of an organic sensibility, of facts in themselves quite unapproachable. The world is silent, the world is dark, till the mind at its lattice sees and listens; till it brings that second element in the grand correlation by which matter and mind spring up together in a measureless universe, whose depths are the recesses of unexplored truth.

More markedly the mind furnishes those ideas by which alone sensations are framed into the fixed magnitudes of the world, or flow on as its firmly ordered events. We simply refer, in passing, to space and time, by which the impalpable mental

impressions known as perceptions are turned into an external world, as unlike themselves as the acorn to the oak; by which the images of a mirror, the colors of a painting, the impressions of a dream—none of them containing as a mere fact their interspaces—are shaped into a coherent whole. Though each finite mind does not create the world, it recreates it for itself. While we did not write Hamlet, we do not read Hamlet without sharing the power of its creative mind. It is ever a fresh appeal to our constructive force. As we render the world to the mind by the mind acting creatively, we may the more easily believe that it owes its present suggestion to mind from the previous presence of mind in it. What we get from it by virtue of reason, we may naturally think entered into it by virtue of reason. This is the law of language in the whole range of our experience.

§ 3. If we take two other ideas, resemblance and causation, we shall still more clearly see how all intellectual construction is from mind and not from matter; how wholly we live in a world whose symbols have force through mind back of them and mind before them. They seem to stand as terms between mind and mind, and to carry reason with them. The tracing of resemblances does indeed turn chiefly on the senses, and may appear, therefore, to be little more than a record of matter upon mind. Yet this impression is a superficial one; for if we study any mind, we shall see that its record has been determined by its own constructive activities. The materials and the relations suitable for its purposes have been taken, and those only.

The two ideas, resemblance and causation, work together from the outset. External forms are interesting to us as they express and interpret internal properties and forces, since it is by the wide recognition of these that we make the world minister to our wants. What language is to thought, that are sensible signs to underlying properties and potential energies. We should weary at once of language, were it not for the included idea; or rather the mind would never be directed toward language, were it not for this its own interpreting power. But this notion of causation, of included forces which find expression in form, color, sound, motion, and are united to each other in laws of definite reactions and interchanges, is purely mental; so much so that consistent empiricists have denied its validity, and striven to replace it by simple sequence. That is they have wished to save language as an interesting symbol to the eye, after it has ceased to mean anything to the mind. Certainly, sequences which have no grounds can give rise to no expectations, can be the basis of no actions; expectations and actions are themselves so far effects. If there are no causes there can be no reasons; continuous conjunctions would be no more significant than discontinuous ones. There is no more causation in the one series than in the other, nor can the one series act either as a cause or as a reason on the mind any more than the other. If things are dissolved, our thoughts concerning them are dissolved also. It is by virtue of what the mind has supplied to things, that things in turn affect mind.

When I say, that "Force is any cause which alters or tends to alter a body's natural state of rest or of uniform motion; To every action there is always an equal and contrary reaction:" when I speak of kinetic energy and potential energy, and the conservation of energies; or when I say that "for every unit of heat measured by the raising of a pound of water one degree Fahrenheit in temperature, you have to expend 772 foot-pounds of work; and that a foot-pound is the energy acquired by the fall of one pound one foot; that a horse-power is the energy required to lift 33,000 pounds one foot in one minute," I am interpreting nature in all these statements by ideas present to the mind, and in no way by impressions in any one of my senses. As thus science constantly proceeds, and the more uniformly as its processes increase in explanatory power, on conceptions which the mind brings to matter, we may well believe that this fact is significant in disclosing the ultimate relation of the two. Language grows coëtaneously with the thought, yet thought is always the kinetic energy which is bearing it on. To make language ultimate, and to regard its meaning as in some way its organic product, would be absurd; to make matter ultimate, and to accept these invisible and subtile connections of mind which it discloses as of its own nature, is a somewhat kindred absurdity. Matter as matter addresses itself to the senses. Here its physical field and force terminate. If it penetrates deeper than this, and reveals pure relations of reason to the mind, universal experience requires that we grant

this result to be the work of reason. As, then, the notion of causation has the range of the physical world as its combining idea ; as this notion is purely the product of mind, actively interpreting the facts to itself, it indicates clearly that antecedent presence of mind in matter, by which matter has become, to its last constituent of relation, a language of mind.

§ 4. If this argument seems unfamiliar and obscure, it gathers clearness and force at once, when we pass to one other conception, that of number. Number, in the exact equivalence of its units, is a wholly supersensual conception, and one on whose partial realization in scientific measurements, much thought has been bestowed. To reduce matter in its secondary forms to proximately exact units and fixed numerical relations is a large part of the labor of the human mind. So true is this in the range of our experience—that very experience which is to give us the initial terms of thought—that every precise numerical relation is referred to mind with irresistable force. Two stones separated by an exact familiar interval from line to line or from face to face, as ten feet; lines cut upon them so as to contain definite angles, as 90° or 45° ; stones so shaped that their surfaces have a distinct relation to each other, or their edges a recognizable length, show to us beyond controversy the presence of man. But what the mind of man is to the secondary forms of matter, that the Primitive Mind is to its primary forms. How shall we regard these coarse measurements as the products of mind, and overlook the re-

lations of the much sharper and more inclusive mathematical thought which characterize elements and elementary construction! This consideration should be enforced by remembering how purely an *a priori* science mathematics are, how clearly the expression of the intuitive, constructive action of the mind. Mathematics are native in human thought, and we discover them to be the key and increasingly the key of the physical world. But this key, hidden in our own bosoms, we find assists us not merely in outer relations, partially of our own construction; it applies with growing exactness as we penetrate to the heart of the structure, showing that reason is older than the world, older than the elements that are cast in its molds.

The examples of exact numerical relations are very many. As most of these have only recently come to the light, we may well believe that there are still more in the background. If we define an atom as the least portion of any element that enters into combination with other elements; and a molecule, as the least portion of any substance which contains the properties of that substance, these molecules in all their varieties are definite masses, with an exact numerical relation and construction of atoms. The most careful structure of brown stone is not so precise in the number, relation and dimensions of its blocks as are molecules, the first terms in matter, in their atomic formation. The molecules or ultimate masses in each homogeneous substance are identical in structure; they contain the same number of atoms disposed of in precisely

the same relations of affinity. Each molecule in each simple and in each compound has thus a symbol expressing the kind, number and connection of the atoms of which it is composed. There are occasional isomeric forms; that is substances whose molecules, containing the same atoms and the same number of each, present different sensible properties. Thus butyric acid and acetic ether have the same symbol $C_4H_8O_2$. This diversity of properties is referred to a difference in the arrangements of atoms as regards their constructive affinities. "Isomeric compounds, when acted on by chemical agents, break up in very different ways," * and so indicate a diversity of interior structure.

In this numerical construction and numerical identity of molecules as expressed in atoms we have simple, mathematical foundations of thought in all the forms of matter. The world has been put together in its first constituents arithmetically, perhaps geometrically—that is with a fixed position of the atoms in the molecule, since these atoms are certainly combined by fixed affinities, which would seem to imply fixed relations in space.

These atomic blocks of the molecule have not in each element the same combining force, as so many bricks with six sides. Different atoms—that is atoms of different elements—present, figuratively, a different number of combining faces. To carry the illustration a little further, atoms are like blocks cut for a more interior or exterior position, blocks that are united by one, by two, by three, by four or more surfaces to the masonry of which they form a part.

* The New Chemistry, 295.

Atoms unite with each other in the molecule by a single or by several affinities, and thus we have univalent, bivalent, trivalent, quadrivalent atoms. Hydrogen atoms have but one tie; carbon atoms four ties.

Equal volumes of two gases contain, under the same conditions, the same number of molecules. The weights, therefore, of equal volumes of two gases express the relative weights of the molecules of those gases. But the molecule of a pure element like hydrogen may be made up of more than one atom; in this example it is made up of two atoms. The number of atoms in a molecule of an element is inferred from a study of the combinations into which that element enters. The molecule which contains the least of the element under consideration is supposed to contain it as a single atom. Thus the molecule of water is composed of two atoms of hydrogen and one of oxygen, while other molecules, as that of hydrochloric acid contain only one atom, H Cl. The hydrogen atom as the lightest, "smallest mass of matter known to science has been chosen as the unit of molecular and atomic weights."* With this unit of weight, termed a microcrith, a table is constructed expressing in microcriths the weights of the elementary substances. So fit a unit of measurement has thus been found in hydrogen that the atomic weights of the elements are usually expressed in whole numbers, while the most important elements in the structure of the world are especially simple in their combining numbers. The relative weight of atoms

* The New Chemistry, p. 130

being reached and the facts being recognized (1) that they enter into the molecules of all compounds in definite numbers, (2) with a fixed number of ties in each elementary atom, (3) and with a settled relation of these ties to each other, we have at once a complete numerical expression for every molecule, the most complex, with a defined relation of its parts. Whether these connections do or do not appear in the make up of the molecule as geometrical forms, the real relations of the atoms may be correctly presented to the eye in this way, and the structure of the molecule becomes as simply mathematical as any product whatever of mind.

If the imagination fully takes in this fact it can hardly appear less in its rational force than the seal of mind set in the very outset upon matter. As a plum to the whole earth, so in size are the atoms included in a drop of water to the drop itself. Whether we image these atoms as built into the molecule like faced stones in masonry, or in con stant motion in vortex rings, as Sir William Thompson conjecturally presents them,* we have equally, and with equal marvelousness, that measurement of parts and definiteness of construction which everywhere in human experience are the indices of mind.

If it be thought that these facts are explicable by supposing intelligence in a rudimentary form to be found far down in matter, we make answer; (1) that this statement itself offers itself to us as simply words with no illustration in anything found in human experience; and (2) that the intelligence dis-

* Recent Advances in Physical Science, p. 294.

closed in the molecules of matter is not germinal intelligence but intelligence of the largest range. There is either here no thought or the most complete thought, no wisdom, or perfect wisdom. But if this is not wisdom, when we consider the immediate and the ultimate results, then we should alter our definition of wisdom.

This numercial composition of the molecule, by which the number of its atoms is fixed and the affinities of each atom are exhausted, involves a combination of elements in all compounds, both by determinate weights and determinate volumes—when the form is that of a gas—and under numbers in each element which are multiples of the atomic weight of that element. These relations are not merely proximate, they are exact, and carry the numerical idea thoroughly through the foundations of all physical structure.

	Nitrogen by Weight.	Oxygen.
Nitrous oxide	28	16
Nitric oxide,	14	16
Nitrous trioxide,	28	48
Nitric peroxide,	14	32
Nitric pentoxide,	28	80

Other relations in the same direction are appearing and still others doubtless remain to be discovered. The structure of the molecule grows out of (1) the atom as the ultimate part into which any element can be divided and (2) the quantivalence of these atoms. "What is true of the atoms of gold and phosphorus is true of all those elements which

have several degrees of quantivalence. At each successive step the quantivalence increases by two bonds, and never by a single bond. The explanation is thought to be that the bonds of any atom when not in use to hold other atoms, are satisfied by each other, and that so far as the increased bonds are concerned, the atom is in the condition of a horse-shoe magnet with its north pole directed to its south pole."*

So thoroughly does this quantivalence of atoms guide the chemist in understanding the structure of molecules, that he is often able to explain the difference in the properties of isomeric bodies by referring it to the distinct ways in which the same atoms can be combined in the molecules of the two forms, and also to secure new compounds and isomeric forms by following the suggestion of the possible combinations and arrangements of the atoms in a molecule.

§ 5. Water has a greater capacity for heat than any other substance. The unit of heat is the amount of heat required to raise one pound of water one degree Fahrenheit. The part of this unit which it requires to raise a like amount of any other substance one degree is its specific heat. The product of this fraction in each instance into the atomic weight of the element to which it belongs has been found to approach so nearly to the number 6.39 as to give rise to the belief that the discrepancies are due to a diversity in secondary circumstances, and that "if substances could be compared in precisely the same state, it is possible that the above product

* The New Chemistry, p. 241.

would be constant." * Hence it is inferred that the atoms of each different element have the same capacity for heat, and that a pound, therefore, of any element will be raised in temperature one degree with more or less heat according to the number of atoms it contains.

Elementary substances can also be arranged in families in such a way that the combining numbers of the members of each family shall differ from each other by multiples of a fixed number, as 9 or 8 or 5. Thus ozone, fluorine, cyanogen, chlorine, bromine, iodine, form one series, the combining numbers being 8, 17, 26, 35, 80, 125. These numbers differ from each other by nine and the multiples of nine.† The numerical relations which enter into the molecule may not, in all cases, have any definite significancy for us; they none the less mark the precision which belongs to mind, and hold their reserved truths. If it be said that the argument overleaps itself, for here it is found as a fact that matter involves the same exact relations as those of mind, we answer, (1) that we are to determine what belongs to matter as matter, and to mind as mind, by their respective action within the range of experience, and so interpret the facts beyond experience; and (2) that, for reasons sufficiently urged, the ultimate construction of matter cannot be referred to matter itself. It must be either referred to mind or left unreferred. Mind may begin, matter can not.

§ 6. We have in crystals, as a result of free molec-

* Ibid, p. 133.

† Religion and Chemistry, p. 291.

ular arrangement, new forms of mathematical relations, disclosed in lines, angles, surfaces and solids. Freezing water is interlaced with straight lines, while snowflakes arrange themselves under a variety of star-like forms, whose constructive angle is in each instance 60°. A solution of sal-ammoniac sends out its filaments at an angle of 90° or of 45°. This symmetry, under favoring circumstances, is carried into solids, and we have six systems of crystals, divided by the number, position and relative length of their axes. In these systems we have symmetry of surfaces and exact angular measurements. When the molecules of any particular substance are left freely to their constructive attractions, they arrange themselves in passing into a solid in various forms, in which the mathematical idea of exact numerical relations finds complete expression. "The position of planes is related in some simple ratio to the relative lengths of the axes of a crystal." * This law gives a mathematical basis to the science beyond that involved in mere symmetry.

The general combining force in nature, that of gravity, works under a definite law, and has thus become the germ of stellar systems and cosmical construction. This first work it accomplishes while in a hundred ways giving conditions to all secondary inorganic and organic processes, and modifying their results. Out of the law of gravitation spring the three laws of Kepler—the ellipticity of the orbits of planets, the description by the radius vector of each planet of equal spaces in equal times, and the equality of ratios between the squares of the periods

* DANA's System of Mineralogy, p. 49.

of revolution of any two planets and the cube of their mean distances from the sun. These laws, with the larger share of astronomical knowledge, only express the force of the first simple law. Some are ready to feel that a law, like that of gravitation, loses proof of design by its very breadth and interior necessity. We may at some time be able to show that this law of gravitation is not an ultimate fact, but is involved in deeper facts, precisely as it itself now carries with it so many secondary facts. This depth to which thought extends, this range of the first pregnant principle, are in themselves fitted to emphasize the priority of mind to matter. If matter offered itself to mind in all our cosmogony as simply inert, indifferent material, we might well affirm its ultimate independence. But when we find, and increasingly find as we more fully understand it, that laws, definite relations, forces working from the outset toward given results, belong to its simplest forms and compose its properties, we are assured that its primordial elements are only the first terms of intelligence. However deep we dig down, mind is deeper, and has fully begun its work on the foundations of the world.

When we are dealing with such energies as heat and light, mathematical relations still go with us, and give us, as terms of thought, our chief power of comprehension and use. A remarkable example of this is offered in the lines of the spectrum. These disclose to us, now by their fixed position, and now by their slight displacement, the elements of distant heavenly bodies, the condition of these

elements, the motion of these bodies and its direction, with a proximate estimate of its rapidity.

In proportion as things offer themselves more directly to our senses, in proportion as properties are more numerous and forms are more complex, the simpler mathematical relations disappear. The world starts, as each mind starts, in mathematical elements which are swallowed up in the growing aggregate. In the vegetable kingdom, number and figure retain very considerable ground, though the living powers are constantly breaking over them. The parts of flowers show an extended and beautiful combination of simple numbers and simple positions. In animal life this kind of symmetry is confined to its lowest forms; higher up it is displaced by more complex and significant relations.

In the spiritual world another set of ideas finds entrance, beauty, truth and right. No possible analysis can carry these back to simple material qualities or physical relations. But if we admit them to be, in reference to matter, transcendental ideas, then the whole material world has been pressing up, by stages of development, to forms of action and thought not contained in itself. This entrance last of the highest ideas of reason, shows that the evolution of the world has been progressive under the motives and measurements of mind, and and not under those of the senses or of material forces. These were more explicit at the beginning than at the end, save as more spiritual life has entered into their comprehension. The lower is transformed in the later stages of development, not so

much in itself as in the higher spiritual powers brought to its apprehension. But if the spiritual is put last and highest in evolution, is it not because it was first and foremost in the constructive purpose? This growth toward the spiritual, and the ultimate passage of evolution into it, are the supreme facts to be felt and expounded.

§ 7. We have shown matter to be permeated by ideas of reason, as those of resemblance, causation and number. This proof might go much further. Resemblances, for instance, are constant terms of thought, and the world is so full of them, that all its material, in every aspect of it, takes on the classifications of science. Still farther, however, matter is not merely constructed, it is constructive. We first regard matter as something inert, something which offers resistance, and is not easily gotten rid of. A better understanding presents it to us as distinct centres of distinct forces, and its properties as permanent powers. Matter is not passive but active, and is accompanied with wonderful changes of activity, as it takes upon itself new forms, or enters into new combinations. The energies of nature, which as mechanical, chemical, thermal, electric forces are expressed in cohesion, attraction, pressure, motion, and which play upon matter in masses and in molecules, are permanent, often in some very obscure but real form of action. The material world thus ceases to be to our thought indifferent and inert, and becomes positive and active, a present expenditure of energies for immediate ends, an omnipresent power.

But the activities expressed in matter and in motion are each of a definite nature, and taken collectively—66 elements and a half-dozen energies—constitute a limited variety of things which stand in wonderfully fruitful relations to each other. Hence these forces, as active and related forces, have upon them all the marks of mind. They are each instantly expressed in a service; they are in a thousand ways united to each other in their services; and they carry forward their services in a well-ordered plan. They are also, in their relations to each other in time and in space and in their several quantities, ready for their work. The world is not simply made up of fitting kinds of matter; it is made up of them with great diversities in quantity, and in needful positions and periods, in reference to each other. The world, though a more irregular structure than a dwelling, is one far more marvelous in the quantities, adaptations and local relations of its several kinds of material. Is it not the silence and grandeur of the work that hide its precision of method from us? If certain materials, fitted for specific offices and united in appropriate quantities to reach distinct ends, are undeniable indications of mind within the range of human experience, so ought they to be beyond that range; nor should the energy of the forces nor their persistency of action disguise the vigorous hold of reason upon them. Their relations expounded to us by thought do exist in them each moment, do accompany them from stage to stage, as pressing on they accomplish a marvelous creation. How do they exist? What other proof could be

given of the pervasive presence of mind in matter? What other proof is there than this of the soul of man in the body of man? Action, a definite fitness in each action, a combination of definitely fit actions, the concurrence of all in a progressive work by quality, quantity, place and time, are all present to emphasize the reason that overrules the world.

But it is said that law and order may as truly inhere in matter as in mind; that this is what the facts offered disclose; and that we are not at liberty to affirm that in cosmic facts order is any longer an index of mind. A strange conclusion this to be formulated by Empirical Philosophy! If there is anything which experience, within its own proper field, at work on the principles of knowledge, can assert with certainty, it is that definite construction expresses mind and the want of it matter.

It may be urged that an experience so late and so narrow as ours cannot define distinctions so broad and so universal as these between matter and mind. Certainly, then, such an experience can not overthrow these distinctions. The fact that certain distinctions are here and now fundamental, the very first terms in experience, carries with it, till contradicted by definite knowledge, a presumption of the strongest character that these diversities have existed from the beginning: that the end does but declare the beginning. So it is that we reason in geology, in physics, everywhere. By experience we must mean experience proper, temporal experience; it is this that we are bringing to the interpretation of cosmic experience. It is the nature of

these cosmic activities that is the subject of discussion.

§ 8. It may be further urged that there is an obvious difference which destroys the force of the analogy, and calls for a very different interpretation. Matter and force are indestructible, are consequently eternal, and therefore there is no place for the prior action of mind in them and through them. This objection needs thorough consideration. The indestructibility of matter and the correlation of energies do not carry with them the eternity of the physical world. If they did, the present argument would wholly fail.

Plainly the permanence of the present system, once entered on, is an essential part of the laws which control it, and of the constructive purposes it subserves. If matter or energy were suddenly to disappear, or suddenly appear under man's handling, confusion and danger would prevail at once. No more pervasive form of disorder could be introduced. The mere fixedness of laws, therefore, which owe their present value to their certainty, proves nothing as to the eternity of the entire system to which they belong.

"*Matter is indestructible, and is measured by weight; energy is indestructible, and is measured by work; intelligence is indestructible, and is measured by adaptations.* These great truths explain and supplement each other." * These statements plainly cannot remain in the form in which Prof. Cooke has left them. If these three eternities are co-equal, the first two, matter and energy, exclude the third, in-

* The New Chemistry, p. 208.

telligence, by leaving nothing which it can do, nothing by which it expresses itself. Affirm the full eternity of mind alone, and the permanence of matter and energy in the present system of things becomes only an expression of preceding wisdom.

§ 9. This result leads us to a closer scrutiny of the assertion that matter and energy are eternal. Our proof of this assertion is very slight. It is a conclusion drawn from their indestructibility under the hand of man. Evidently the solar system is not eternal, nor any other system in the Universe. Nor is it possible to suggest any probable relations of matter and of energy which would result in an eternal series of such systems. Evolution involves finiteness as its essential condition. Growth, measured by stages and lying between definite terms, can not extend from eternity to eternity. The length of the included period is immaterial. The tree that lives a thousand years is no more eternal than the fungus whose growth is embraced within a few days. Our system is a definite evolution between definite conditions, nebulosity on the one hand and solidification on the other. In the movement from the one to the other, there is a constant dispersion of light and heat. This dispersion seems to be equivalent, as far as all constructive purposes are concerned, to annihilation. It is not easy, in reference to ultimate results, to distinguish between the two. Our system, a type of every other system, has had, and can have, only a definite period of distinct evolution. No sufficient suggestion can be given of the way in which this period was entered

on, otherwise than by creation, nor how the inertness and death into which this system must ultimately pass are to be escaped, otherwise than by a destructive and renovating action. As certainly as the present state of the world has been reached by definite stages, springing from fitting terms, so certainly can it not have transcended these terms by all eternity; as certainly as it is passing into new results, it cannot, by all eternity, leave those results behind it. As a growth—an evolution—the world, if no comparatively proximate starting point had been given it, must have passed away long ago, lost, as a mere speck of time in the past eternity. Nothing by mere stages of construction could reach down out of by-gone ages to the present hour.

An effort is made to turn nature, as represented in the solar system, into a circle, and to escape both a beginning and an end. The effort is vain. If, as has been suggested, the planets were ultimately to fall into the sun, the collision would not restore the primitive state, nor the full potentialities by which the work that has now been done could be repeated. Much the larger portion of the energy once contained in the solar system has been dispersed by the radiation of heat, and there is no known method by which this energy is to be gathered again, or even put to constructive service elsewhere.

Experience, then, can not affirm the eternity of matter and energy, much less affirm it in a form which would account for the creative work going on about us The conclusions of science lie in the opposite direction. The world wanes in power as

certainly as a heated ball cools in the open air; nor is there any indication of any method by which this power is to be restored.

The correlation of forces—energies—does not carry with it eternal evolution, but the opposite rather. Energies that are put to any work are exhausted by that work as *working powers*, as much as man himself, who is one expression of them. A certain condition of energies is called for before work can be done, and that condition is lost by the work that follows from it. The three chief forms of potential energy in the world are suspended bodies, heated bodies, and bodies of a high chemical composition. But the weight falls in performing labor, the heat is lost, and the chemical relation is broken up. We can not restore the height, nor the fuel, nor the food, without a fresh draft on our original resources. Every change by which work is done is thus a fresh reduction of potentialities, and looks to their ultimate exhaustion. There is no more perpetual motion in the Universe as a whole, than in any of its parts. The revolution of the Earth in its orbit, if it involves any work, any resistence less or more, must come to an end. All the changes involved in labor are from mutable to stable equilibrium. The constructive power at any one time present in the solar system is wholly a finite quantity, steadily reduced by expenditure. Potential energy passes into kinetic energy, and is then dispersed in some form of work, the ultimate escape being chiefly in the radiation of heat. When then the sun, the present reservoir of energy, shall

cease its radiation, stillness and death will follow. Force is not eternal within the range of one's own experience, in the sense that it is always equal to itself, or always ready for renewed expenditure. The law of equivalence applies to energies not to forces; that is, to certain available reservoirs of power, as falling water, fuel in the furnace, and food in the animal. These energies take a common term of measurement, can be expressed in each other, and, in a limited degree, can be interchanged with each other. But these energies are not only exhaustible, they are suffering constant exhaustion, and passing into forms no longer available.

Forces on the other hand, are not known to be equivalent. I press the table before me with my hand, or I press it with a ruler one foot long, two feet long, three feet long. I can make no assertion in reference to the forces of resistance called out between the molecules of the table and of the rulers by the energy thus put forth. If the rope by which I drag a stone be one hundred feet in length, there must be a corresponding multiplication of actions and reactions before the energy expended reaches the load. The relation of these forces are much too subtle for our measurement, The rope, having endured repeatedly the strain of many tons, seems to remain exactly what it was in the outset. The forces within itself seem to disappear the moment the load is taken off. The real point of knowledge and of interest in the pressure of my hand upon the table is, that the potential energy of my muscles is being expended, and that this energy is passing from

a plain, palpable and available, to an obscure, impalpable and unavailable form. Any perpetuity, therefore, of matter and of energy which pertains to the present system of things does not carry with it the eternity of that system, nor of its constituents. That system, on the other hand, must have had a definite beginning of some kind. Its very motion involves its finiteness, a point from which it has come and to which it is going. We seem, as the fruit of the discussion, to be entitled to the following propositions. (1) All movement as evolution in the Universe is due to unequilibrated forces passing into equilibrium; (2) unequilibrated forces cannot start from equilibrated ones; (3) unequilibrated forces, involving a perpetual passage into equilibrated ones cannot have existed from eternity; (4) they must at length end in equilibrium; (5) evolution does not admit the eternity of matter.

§ 10. We wish to impress the thoroughly constructive relations which inhere in matter by a few examples. We need, in the outset, to anticipate the feeling that these relations arise so much from the very nature of the case as to express no purpose. They are so thoroughly reasonable, they rest in so direct a way on primary properties, that when we understand them, we are inclined to feel that they could not have been otherwise. They lie back of human thought, why not of the divine thought! Not so. They should show us rather how profoundly mind pervades matter, and makes the whole physical realm rational. There is no other necessity in things save that which reason puts there.

We first instance the varying affinities of elements for each other, and these affinities as affected by temperature. The affinities of any elements for each other are ultimate facts,—the assertion remains the same even "if chemism is a mode of polarity" —yet in these affinities and in their relation to each other in energy are lodged the first constructive forces of the Universe. These elements may be arranged in order, each preceding element having less affinity for those which precede it, than do those which follow it. They thus lie between positive and negative poles, with a variable intensity as they approach the one or the other. Oxygen closes the series at the negative pole, and is possessed of a most intense and extended affinity. Constituting about one-half the globe, it becomes, by virtue both of quantity and by its active combining power, the great constructive agent in purely chemical changes. Oxidation, or union of other elements with oxygen, becomes a most pervasive and spontaneous tendency, keeping the elements in definite chemical activity. What gravitation is to moving bodies, this oxidation is to moving molecules. Oxidation represents the lowest level to which the elements sink in seeking equilibrium. To this point they fall, and from this, they are raised again by all opposing energies.

Besides this affinity for oxygen, each element has its subordinate affinities, discharging specific offices and modifying ultimate results. These affinities are the active and carefully graded agencies in furnishing the frame-work of order. These affinities are affected by mechanical conditions, and so put into

interplay with mechanical forces. Above all, are they modified by temperature. Temperature is a controlling condition in chemical combination, and affects different elements very differently. The forms in which the several elements and compounds exist, and the temperatures at which they pass from a solid to a liquid, or from a liquid to a gaseous form, have most important and complicated bearings on their constructive services in the world. The liquid, and still more the gaseous form, as giving the greatest liberty of movement, favor chemical combination. Oxygen envelops the world as an abundant, permanent gas, and thus holds its great power in an omnipresent form.

It is impossible to state with any fulness, or indeed to conceive with any clearness, the complexity yet importance of the results in world-making, which turn on the intervention of chemical affinities and physical forms as modified by temperature, affecting each element in its own way. Single illustrations, though only two or three among a multitude, may help the thoughts by nearness of vision. The most common artificial lights are the result of the combustion of hydrogen and carbon with oxygen. Take a common oil lamp. The flame is initiated by the hydrogen, and owes its luminous power to the carbon. A series of simple, consecutive relations are involved in this result, all of which concur in its easy, successful attainment.

(1) The hydrogen of the oil is set free and inflamed at a readily attainable heat. (2) The heat from the combustion of one molecule liberates the

next molecule, and furnishes the conditions for its combustion. This movement is neither inconveniently rapid nor slow. The oil does not refuse to burn, like wet fuel; or flash into flame, like powder. (3) The liberated carbon does not unite with oxygen till it has been heated to a white heat in the hydrogen flame. (4) This union then takes place in the same quiet continuous form as that of the hydrogen and oxygen. (5) Both forms of combustion yield harmless products that pass off freely, the one vapor, the other carbonic acid gas. (6) This process admits of being made complete by the simplest fixtures of an ordinary lamp. The draught of the chimney furnishes air enough to consume all the carbon; the lamp ceases to smoke, and the clearest light is obtained.

Such instances are not interesting as standing alone, but as being everywhere present, and as profoundly involved in first principles. They are not the results of secondary contrivances, they are part of the primitive provision; they are only one articulate sound in the full sentence in which wisdom utters her voice. If these cases did disclose special contrivance, and did not lie at the intersection of general laws, then would thought become afterthought and step from its throne. We think it also a legitimate deepening of the impression to be reminded, that so many of these relations are adapted both to the wants and powers of man as an intellectual being. An artificial light is the necessity not of a brute, but of a man. It is reached for intellectual ends by intellectual powers.

Other illustrations are offered by gunpowder and nitro-glycerine or dynamite. These are both very essential agents in civilization. Our greatest labors in mining and engineering would be impossible without nitro-glycerine. The two materials supplement each other. Powder alone can be used as a projectile agent, and is extremely serviceable in blasting when only a moderate force is required. In works of magnitude nitro-glycerine is "vastly superior to gunpowder," so much so as to be in many cases a necessity if these labors are to be prosecuted.

This superiority is due to its chemical construction. The explosive powers of both materials arise from the sudden production of gas. "Nitro-glycerine yields fully nine hundred times its volume of gas, while with gunpowder the volume is only about three hundred times that of the solid grains."* A second consideration of more moment is that the explosion in the case of glycerine is instaneous, the decomposition extending at once to the whole mass; in gunpowder it is simply rapid. In both materials the reaction is due to the weak affinity of nitrogen, and the explosive force to the nitrogen, liberated as gas, and to the carbonic acid gas, the result of the reaction. "But while in the gunpowder, the carbon and oxygen atoms are in different molecules, although lying side by side in the same grain; in the nitro-glycerine they are in different parts of the same molecule." † The ease and safety in the use of gunpowder are found in

*The New Chemistry, p. 224.

† Ibid, p. 220.

the degree of heat neither too great nor too little required to inflame it, but its want of full power is connected with the same cause. Combustion, extending from grain to grain, is not instantaneous, and the first grains of a large charge begin to do their work before the entire charge is inflamed. This fact greatly diminishes the power of gunpowder as an explosive, while making it only the more efficient as a projectile force. The gun would be burst by instant explosion, while a continuous explosion follows up and accelerates the ball. Nitro-glycerine is not exploded by heat but by concussion. "The flame of an ordinary match can be extinguished in it."* Thus concussion reaches all parts instantaneously, or proximately so, and the molecules awake their slumbering energies conjointly.

The many organic compounds of carbon are peculiarly unstable, but carbon as coal is so inert that it can be treasured anywhere in the earth for any period of time. There is to this assertion the one exception on which the value of the coal deposits depends. Coal, at an easily attained temperature, burns, maintains its own combustion, and yields heat and so kinetic energy in manageable ways and amounts. Iron, by whose instrumentality this energy is chiefly turned into working power, oxidizes, on the other hand, slowly at a low temperature, while at a high temperature oxidation ceases. Heat checks the combustion of the furnace, while it promotes that of the coal in the furnace. The heated steam in the boiler acts on it, notwithstand-

* Ibid, p. 216

ing the increased energy, much less than mere vapor.

The general law is, all substances expand by increase of temperature; but this law is noticeably modified in the passage of several substances from a liquid to a solid form. Nor is this expansion in solidification the same in degree for all substances in which it occurs. It has the form of variable exceptions for definite ends, though doubtless a fundamental fact grounded in molecular construction. In the case of water, the expansion is very decided and very influential. Ice becomes buoyant, and the river and the lake are early protected from the extreme cold by a covering of their own provision. The motion of the glacier, which has been so efficient an agent in the world, is the result, in large part if not wholly, of this fact. If any substance expands in solidifying, the temperature at which solidification takes place is reduced by pressure. Water boils upon a mountain at a lower temperature than in the valley. Indeed, it would be impossible to cook food by boiling in an open vessel if the weight of the atmosphere were much less than it is. In the melting of ice under pressure at a temperature lower than 32° Fahrenheit, we have the reverse of this principle. Ordinarily an increase of heat and a decrease of pressure occasion expansion. But when a decrease of heat produces expansion, this expansion being resisted by pressure, takes place only, if the pressure is increased, at a lower temperature. If a wire with a weight attached is so suspended as to press sharply on a block

of ice, it may be made to cut its way entirely through the block, while the two parts reunite behind it. Each portion in the path of the wire thaws under pressure, and freezes as the pressure is removed. Thus the unequal forces which are spread through a glacier, cause the ice to melt in the lines and planes along which they accumulate. As the ice melts, it occupies less space than before, and motion becomes possible. But motion relieves the pressure, and the surfaces reunite by freezing. We cut glass, because glass does not perfectly fill the mould in cooling. Iron, on the other hand, expands slightly at the last stage, and fills its limits without bursting them.

§ 11. Quite akin to the original diversity in force of chemical affinities between elements, and to these affinities as differently modified by temperature, is the variety of service which belongs to different elements and different compounds. And this service is in turn altered by changes of form easily within the reach of man. The first consideration, the variety and aptness of properties in different substances, fitting them for varied offices, presents in itself a broad field. The metals, iron, lead, zinc, tin, copper, platinum, mercury, silver, gold, offer obvious illustrations of the manifold ways in which the mechanical, commercial, social, intellectual and æsthetical wants of man are supplied. The second point, the service of elements as affected by mechanical and chemical changes within the reach of man, is a little less obvious and correspondingly more fundamental. Iron, by far the most essential

metal in industries, so much so that the free use of it marks an age in the history of the race, is broadly and abundantly scattered over the globe, and in a form which, though at first sight it seems to offer, and does offer, an obstruction to its early use, is really ultimately most favorable for it. The iron ores, when the skill is present to use them and to use iron, hold their wealth in an open hand. "A mine of solid iron would hardly pay the working."* Iron, under the manipulations of man, takes on three forms, with quite diverse yet closely united services, cast iron, wrought iron and steel. These forms are very different in their mechanical adaptations, and each form is very essential. Indeed, steel is the crowning power, the one Protean instrument, in the hand of man.

To these uses iron adds those strange magnetic properties which have guided men to new continents, and made them explorers of the world. The not less strange loss and gain of magnetic quality by soft iron under a changeable electric current has been the condition of telegraphy, and made the world quite another place, socially and spiritually.

We have no wish to amplify at this point. We only wish to see, and to be able to say distinctly, that the world, in its ground-plan, presents endless corridors with endless suites of rooms, all with their respective uses, while all services are concurrent and accumulative. A very extended illustration of this last fact is offered by the atmosphere.

§ 12. The chief ingredients in the atmosphere are:

* Natural Theology, Dr. CHADBOURNE, p. 244.

Nitrogen,	77.95
Oxygen,	20.61
Aqueous Vapor,	1.40
Carbonic Acid,	.04

Other gases, as ammonia, are very much less in quantity. The gases and vapor of the atmosphere exist together as a mixture, and not as a compound. Each, therefore, is in the fullest exercise of its properties. The free motion of the molecules of gases involves their rapid and relatively uniform diffusion through each other. The atmosphere is thus a homogeneous medium, whose density turns chiefly on its own volume, and the specific gravity of its constituent gases, more particularly nitrogen.

The atmosphere is a medium of motion to insects and birds, as the water is to fishes. It is their field of life, while it presents secondary conditions of movement to many forms of matter, to seeds, to animals and to man ; to clouds, balloons, missiles and vessels. As many things float in the water, or owe their motion to the water, or move through the water, so do many things float through the air, and much of the movement on the earth is either due to its action, or encounters its resistance. If the specific gravity of the atmosphere or its volume were materially different, these mechanical conditions would be correspondingly modified. If it were heavier, motion against it would be burdensome, and its own motion would be in a corresponding degree irresistible. Instead of the force of a wind, it would have that of a torrent. If it were less in weight, its buoyant quality would be in the same

measure diminished, and the air and the earth under it would be relatively still, silent and dead.

If the atmosphere were greater or less in volume, animal life would require a new adjustment to it, even if the change came within the range of possible adjustments. If its volume were less, its rarity would compel an increase of lung-capacity unfavorable to symmetry, and of muscular expenditure in respiration in conflict with efficient work.

But the atmosphere is also the one reservoir of the material of life and the energies of life, and as such must reach and envelop every portion of the globe. Nor does it offer merely the material and the energies of life; it carries with it in its oxygen the working force in chemical changes generally. Nitrogen is the most inert of gases, oxygen the most active. The activity of the one is sobered to the point of highest service by the passivity of the other. If the proportion between the two were materially altered, either—oxygen being increased—combustion by its too great activity would become universally destructive, or—nitrogen being increased—it would be so reluctant and tardy as not to meet the purposes of constructive change, or of life; undue rapidity or torpidity would immediately follow. We should either not be able to kindle a fire or not be able to extinguish it; we ourselves should sink in sensibility to the cold-blooded animals, or suffer the exhilaration of constant intoxication. The full efficiency of pure oxygen now remains to us, while it is diluted in daily service with four parts of nitrogen. The air, in respiration. has sufficient oxygen to

purify the blood, and give it afresh all the conditions of life and growth.

Large amounts of carbonic acid are thrown locally and rapidly into the atmosphere by the respiration, and still more by the combustion, of a large city; large amounts are also taken locally and rapidly from the air, as vegetation spreads over large areas in spring, or grows rank in early summer. The atmosphere has sufficient volume not to be affected in its proportions by these quick changes, though carbonic acid constitutes but one part in twenty-five hundred, while the law of diffusion among gases immediately and fully corrects the local deficiencies or accumulations of any one ingredient.

The atmosphere has also a most important office in the diffusion of light. The world is filled with light, its rays moving in all directions with comparative equality. This even, soft light is due largely to the reflection and dispersion of its rays by the atmosphere, with its floating air-dust. Instead of intense cutting beams, coming direct from the sun, we have a pervasive light, that presses in from all quarters, and goes out at all quarters. Though the sun is the source of light, its rays are quite another thing as filtered, reduced and dispersed by the atmosphere, from what they are beyond its range. In like manner, but more directly and exclusively, the atmosphere is the medium of sound. The world would not merely be comparatively dead to motion, it would be quite dead to sound, were it not for the air. Its density determines the presence and quality of all sounds.

On it floats the melody of waves, the song of birds, the human voice. As the air is penetrable to the eager eye in all directions, so it throbs far and near in motion for the attentive ear, laden with the sweet speech of nature and of man. Nor is this the only sense it addresses, it bears fragrance to the nostrils, and brushes, with lightest feather, the face and flesh of man.

In like manner it is a controlling agent in the diffusion of heat, turning it into a pervasive and genial presence, in place of intense alternations of heat and cold alike unbearable. This service it performs, directly, by its own currents traversing the globe, and also, indirectly, in connection with vapor. The atmosphere is porous as a sponge to vapor. Vast amounts, with an incredible expenditure of energy, are taken up, borne far and near, and let fall as rain on ocean, upland and mountain. This aqueous circulation is the blood-circulation of the globe, and is maintained with an abundant yield of mechanical and vital force, and a prodigal expression of beauty. In this process heat is the chief agent, while it itself is wonderfully spread and equalized by it.

The average amount of vapor in the air is one part in seventy. The capacity of the atmosphere in this particular is a point of utmost moment, as the watering of the earth turns upon it. A little excess in either direction is fatal to vegetable or animal life or both. The rain-fall is comparatively equable in all fertile and salubrious portions of the globe. A little failure here dooms a region to barrenness.

The supply of rain turns on this ratio, on the volume of the air, on the ratio of water to land, and on changes of temperature. The capacity of the air for vapor increases and diminishes with temperature. A cool wind, therefore, stealing through the atmosphere, will pour down a plentiful shower; yet the coldest winds can not drive all the vapor from the air.

A large amount of heat is consumed in the passage of ice into water and of water into steam. In consequence of this fact ice and snow melt slowly even in a high temperature, and steam forms slowly. By the one circumstance we are saved from deluges and by the other from explosions. These are also facts of great significance in the diffusion of heat. Evaporation on the surface of the earth takes up the heat that occasions it and bears it off in a latent form, while the precipitation of rain in the atmosphere liberates the heat, and so reduces the cold that occasions the shower. A summer rain, or even a winter snow-storm, may be observable for its moderate, uniform temperature. Even the hail modifies the fierce blast that produces it. The snow that filters out of the warming air gives the best of blankets to the frozen earth. The evaporation by day softens the intensity of the sun's heat, while the vapor by night checks the radiation of the earth, and so helps to hold the two extremes of midday and midnight in a grateful equipoise. The simple dryness of a climate subjects it to great extremes of heat and cold. The land that nature does not water, she warms capriciously. Few

things are more beautiful than a gentle summer shower, and few things considered in the range of their causes, are more quickening to the intellect, or, thought of in their beneficient purposes, are more grateful to the spiritual affections. Each descending drop dissolves from the air the carbonic acid and the ammonia that are to be the food of plants, restores the air to purity, robs it of its fierce heat and brings back a placid equilibrium of all angry, thermal and electric forces. It sends the watchword of peace and plenty through all the earth.

When we add to these offices of the atmosphere which have been barely glanced at, the beauty of its hourly facts, its blue, its clouds, and its mists, we have indeed a divine animus in the air, which no sensitive spirit can fail to see and feel. What a living thing is the air? How does it throb with energies—as the body with the soul—when the morning light wakes it through and through or the evening light brings it to rest under its curtain of purple and gold? Hardly is the face of man more changeable to thought and feeling. The dove as it comes fluttering down out of heaven, sinking or rising with masterful wing, as it wishes, is only one emblem of this life of the air.

Now these facts, with their associated facts, depend on the qualities and quantities of elements, and laws of interaction, which date back for their adjustment to the beginning of the world. The living thought, the wise adjustment were and so are present. The constructive agency began at the

centre, and to-day rests back on that centre. God is omnipresent in full power, His wisdom was set up from everlasting, from the beginning, or ever the earth was.

The fact that these relations of elements are so fundamental as to interlock all things and necessitate the entire series of succeeding services to the life of the world, does not obscure the argument, it simply compels us to give due weight to the omnipresence of God. It wrests from us the conception of a God above nature, and forces upon us the conception of God in nature. We are to remember that mere matter creates no logical relations; necessity is always and only the product of mind. It is the mind, not the senses, that sees one thing to involve another. If an inner necessity pervades the world, it must ultimately disclose itself as a logical relation, a vision of mind, and so leads us the more directly to the Divine Reason, whose movement is so free, yet so penetrative and grand, as to hold in its premises and principles many conclusions. These things and facts, material simply to the senses, bear with them no inner relations of reason, no coherences which are the frame-work of creation. Shall not mind know mind when it meets it, thought be cognizant of thought when it lies before it in these vast dimensions? What could have been done which has not been done to express reason in a world like this? The naturalist, in making answer, can only fall back on some proposed supernaturalism, which in other connections he so ridicules.

CHAPTER V.

PROOF OF THE BEING OF GOD FOUND IN THE VEGETABLE KINGDOM.

§ 1. THE argument for the being of God somewhat alters its form and force as living things pass under consideration. Up to this point it stands in this wise: Matter and force can not be assumed to be eternal, as the very idea of definite evolution cuts off that of eternity, and as energy is suffering constant dissipation. Nor do the various kinds of matter, as oxygen, hydrogen, iron, silver, by their mere existence, solve the whole problem of the Universe, since the relation of their properties to each other in constructive quality, in quantity, in place and in time, are also to be expounded. In explanation of this primitive idea of the world, the being of God is brought forward.

But the Universe cannot be dualistic in its ultimate analysis. Matter cannot have independent existence. If matter were to exist separately in its properties, and mind in its properties, there could be no such interpenetration of the two or control of one by the other as to explain the unity of the universe. The fifth and sixth propositions of Spinoza serve at least to indicate this difficulty of bringing

harmony to distinct forms of being. "In the nature of things there cannot be two or more substances of the same nature or attributes. One substance cannot be produced by another substance."

Matter, then, must underlie mind, and mind be one of its subtile manifestations; or mind must underlie matter, and matter be simply its more permanent expression. To the degree in which either element, as matter, is independent of the other element, as mind, it is uncontrolled by it, and unexplained by it. But matter is from the outset pervaded, united by the combining forecast which characterizes mind, while the flexible powers of mind, when they appear in their distinctive forms, show no trace of physical properties. We conclude, therefore, that mind underlies matter, and in this conclusion the relation of the two elements in our own physical life confirms us. While the body gives limitations and fixed conditions to the mind, the mind still remains the true constructive agency,

But it may be asked: Is it not a setting aside of the distinctive characteristics of mind to say that matter is one of its expressions? Is not the distinction of matter and mind as completely lost by reversing the method of the materialist, and sinking mental action to the level of material forces, as by raising material forces to the level of mental action? These are questions which must be fairly met. It is no sufficient objection to the conclusion that mind is the ultimate source of matter; that we cannot proceed farther and show how the Eternal Mind can be associated with the physical forces

of the world as their abiding centre. Much the same problem in a narrow form is actually solved in our own bodies. These bodies are permeated by a rational life, and this life retains many flexible forms of action while assuming many fixed conditions. It actually combines the fixed and the flexible, by virtue largely of the rational union of these two elements, the physical and the spiritual. Nor are the physical forces which enter into this life foreign to it. They may be profoundly affected by it. The solidity and coherence of our rational experience are determined just here, and a Supreme Reason, looking toward a kindred expression, finds occasion for the same elements.

The fixedness, then, of physical facts, is not fatal to their reference to mind. Mind does not sink to them by assuming them. It has occasion for them in its own construction, coherent from age to age, and made the common ground of all experience. Nations in their composite life seek at once this permanence in laws, customs and public works. Mind has a stern logic that is inflexible, and fixed methods that are aptly embodied for it in physical laws.

On the other hand, the limitations of matter are absolute; flexibility and forecast can never be covered by it, can never be expounded by it. If thought is to be regarded as the product of physical evolution, it becomes a most recent and narrow fact, in place of that primitive and broad one it seems to be, and its spontaneous, anticipatory power dwindles into an illusion.

§ 2. In considering the argument for the being of God as affected by the facts of the organic kingdom, we are met at once by the doctrine of evolution. By evolution we understand the development of each successive stage of the Universe, and of the World as a part of it, from the previous one, without external addition or modification. All subsequent stages are potentially held in each stage, and so the whole is in any stage we choose to select. The Universe is every moment complete in itself.

Many think that this doctrine is not destructive to the argument for the being of God. "It is notorious and patent to all who choose to seek, that many distinguished Christian thinkers have accepted and do accept both ideas, *i.e.*, both 'creation' and 'evolution.'" *

Others, with equally deep conviction, and, as it seems to us, with more penetration, regard evolution as an idea logically in conflict with that of divine control. (1) If evolution is a fact, we have only to supplement it by one other supposition, the eternity of matter and force, and all occasion and all opportunity for a divine constructive work at once disappear. Our entire argument is thus made to turn on a proof of a beginning in the physical world, since that world, once in existence, is, under the doctrine of evolution, sufficient for all subsequent results. Evolution sweeps the Universe of intervention and throws us back on creation only.

Nor can we regain the ground lost by an assertion of the sustaining power of God. The notion of support in connection with evolution can be no

* Genesis of Species, p. 29.

more than a vague, verbal proposition. If we attempt to define it, and fix its degree, we shall, to the full extent of the meaning we give it, take back the concession already made to the doctrine of evolution. But evolution is one of those notions that owes its force to its completeness. If we limit it in the least its intellectual fascination is gone, the frame-work of a universe disappears. Support implies weakness, that the physical world is not that integral thing we have taken it to be. But if mind makes an inroad of any sort upon matter, we cannot again restore its completeness, and evolution is lost.

What have we done then by accepting evolution? We have staked everything on the proof of creation, and at the same time crippled that proof by granting that all the present wisdom of the world, its life and its beauty, are in the first instance and for an exceedingly long period referable to matter. We are by this concession put on a practical footing with nature alone. The action of God is limited to a single effort, æons since, and we, so deeply immersed in the unchangeable laws of the world, have no occasion to look beyond them. We have no more interest in the divine life than in the atmosphere of the planet Jupiter. The government of God has sunk into the laws of nature, and his being is simply a notion evoked for an intellectual service discharged in the remote and by-gone epoch of creation.

The inherent repulsion of the two ideas, evolution and creation, is too strong, we shall not retain them both. We shall not collect the Divine Presence out

of the Universe and confine it to a brief moment without soon losing it altogether. What we have saved is not worth a struggle. If God has but one instant of action, it is not easy to believe he has any; and, as that instant has so long since passed, its reality is purely a theoretical point. But the omnipresence of God cannot be dealt with in this way. We shall lose our theism equally whether we identify nature with God, or allow nature to exclude God as a pervasive presence.

(2) But if the doctrine of evolution is true, that doctrine includes man, and the intellectual and spiritual nature of man is thus ultimately referable to the physical world. If this be granted, then certainly we have no argument left for the being of God, since the highest known products of thought are physical in their origin. It is simply an illusion thereafter to put mind before matter, for the Universe has put matter before mind. An eddy in the river can not reverse the river itself. The question of a beginning may still bring us perplexity, but can bring no justification to an effort to turn the order of the world end for end, and make conscious intelligence, which is the latest product of evolution, its antecedent germ.

(3) Moreover, the inconceivability of the doctrine of evolution is such, the degree in which it transcends all the terms of our experience is so great, that if we once accept it, the ordinary interpretations of our experience become unsound. If we can believe that the forces which now express themselves in human life and human history were in some semi-

nal form included in the nebulous matter of the solar system, we shall find no sufficient premises in any facts in the world about us for an inference of the existence of a Divine Being. The need of mind to expound anything is too much reduced by evolution to be successfully revived in so bold a service. If our own plans are to be referred to physical forces of a million years standing, intellectual products of all kinds must wither, like flowers, when plucked from these latest uplands of the material world.

There is a kind of inconceivability which once admitted benumbs the mind in all its familiar experience, and such an inconceivability is that involved in supposing the mechanical, thermal, chemical, electrical forces of the world to hold latent in them for an unmeasured period its intellectual and moral powers. The doctrine, therefore, of evolution must be in some way modified or displaced before an argument for the being of God can gain any firm footing.

Evolution finds easy admission to the minds of most till we reach the organic world. The reasons for its extension over this new and much more difficult field are briefly these: (1) Many close lines of relation run through the vegetable kingdom and the animal kingdom. They constitute the chief significancy of the facts involved, and are the ground of their classification. The scientific mind can not for an instant overlook them or easily deny to them that causal connection which they so distinctly indicate. Special creation, which divides

into disconnected links these chains of succession, seems plainly to contradict the obvious force of the facts, indeed, to set aside the entire method of reasoning which science applies to the external world. (2) This argument, so conclusive and pervasive, is strikingly confirmed by what are known as rudimentary structures. These are found in many animals and in man. Certain parts, as fœtal teeth in whales and the vermiform appendage in man, subserve no purpose in the life of the animal to which they belong in this undeveloped form, while in some animals they have a perfect form and an important function. (3) An allied argument, but one much more obscure, is a general likeness in embryonic development between very remote species. The earlier stages of life pass through much the same forms, while specific differences are taken on later. (4) The facts of distribution of life on the Earth indicates organic connections between allied species. Related forms of life occupy any given region according to the opportunities offered by continuity in time and contiguity in place.

If these great facts of life are overlooked and a special providence substituted for the causal relations indicated by them, darkness at once settles down on the whole subject, the lines of thought disappear. A large share of what is known in botany and zoology has been disclosed under the guiding ideas which have led to the theory of evolution. These very broad facts plainly call for some form of this theory; that they demand strict evo-

lution, or that evolution expounds all the facts under consideration is not so plain.

§ 3. The forces and laws relied on in complete organic evolution have been briefly summarized and clearly stated in the Cosmic Philosophy.

"Equilibration . . { External . . { Direct . . . Adaptation. / Indirect . Natural Selection. } / Internal . . { Direct . . . . Heredity. / Indirect . { Correlation. / Use and Disuse."*

These five laws—adaptation, natural selection, heredity, correlation, use and disuse—are offered as including the efficient forces by which the organic world passes from its simplest to its most complex forms. We ask, concerning them: How far are they sufficient to explain the transformation involved? and, How far are they new laws not involved in matter and motion which preceded them? Under evolution they should be able to fully expound the complicated phenomena of life, and themselves be included in the forces which went before them. This entire transformation is covered by the word equilibration.

We should observe that the word equilibration is used in a peculiar sense. It does not mean, as ordinarily, a passage from a less stable condition to a more stable one, as when iron cools or an organic compound is decomposed; but quite the reverse of this, the extended establishment and maintenance of the most delicate yet stable organic equilibrium. The word ceases, then, to carry with it any presumptive force.

* Vol. ii, p. 65.

We have, previous to the appearance of life, only mechanical, chemical, thermal, electrical energies to be equilibrated, and the fact that this equilibration has been taking place for incalculable ages—long enough for the most exacting induction—on a plane quite other and lower than that of the organic world. We have not the least suggestion of any equilibration among purely physical forces that at all corresponds to life. When, therefore, that peculiar combination known as a living organism, and that plastic power known as life, are, in the outset, assumed under the term equilibration, we have a foreshadowing of the kind of steps that are to be taken. Observe the magnitude of the assumption. A power or powers of some sort, so restless, so varied, so antagonistic, that two great kingdoms are to be built up out of their persistent and changeable efforts at equilibration with a comparatively fixed, physical environment are obscurely taken in by a mere word as the foundation of this immense superstructure. Surely one-half of the ground is assumed in the first term by which the theory gets expression. Equilibration implies extended, subtle, changeable tendencies, matching themselves at many points with the physical forces about them, and so building up in delicate yet ephemeral adjustments ten thousand wonderful products. How few words it takes to indicate and to give a scientific gloss to this magnificent series of facts, without in the least explaining it!

The birth of time is here indicated by the one word equilibration. Physical forces had been equilibrated for countless æons without life, and when

life appears, the transition is slurred over with a word.

By adaptation is meant the direct action of physical forces on forms of life, fitting them to their circumstances. The adjustment is not found in any peculiar property of the living thing, but in a simple response to external conditions. There was a time when much was made of this consideration. That time has passed by, and left a very small remainder of knowledge. There can hardly be given, in either organic kingdom, a significant fact of adaptation, an organic change directly due to external forces. A tree that grows in the current of a strong wind shows by its contour the action to which it has been subjected. The particular structure has been modified by the special circumstances, but no organic tendency has been touched; these tendencies remain exactly what they were.

A tree that grows in such a current also shows an elliptic form in a section of the trunk. This has been attributed to the increased circulation occasioned in opposite faces of the bowl, alternately extended and contracted by the swaying of the top. It is not plain, however, that a forced circulation of this sort, as a merely physical fact, would not prove destructive rather than constructive. Nor will this increased growth be found to correspond to the motion involved, but rather to the exigency of the case. The elm supports its trunk with strong buttresses in arrest of motion rather than as the result of motion. The wounded tree increases its growth on either side of the injury to cover it more quickly,

and to restore the balance of strength. The branch at its juncture with the tree departs from its usual symmetry of construction about a centre, and becomes eccentric, in order to frame a stronger joint. Some trees, as tamaracks and balsams, surround their branches as they increase in size with rings of growth on the body of the tree, like washers, to strengthen the union. Adaptation, then, which discloses the direct results of physical forces in organic products, and is, therefore, in the line of evolution, may be passed, as offering explanations of no magnitude or interest in this connection.

The second agency is natural selection. This is greatly relied on in expounding life, and is, doubtless, a consideration of first importance. But however many secondary facts in the organic kingdoms may be understood by means of natural selection, certain it is that natural selection is not a law of sufficient scope to do any considerable portion of the work that now falls to it under evolution. Natural selection assumes a tendency in all living things to slight variations in all directions, and then explains the systematic results that life presents by the survival of the fittest. On this tendency of organic things to vary it casts no light, but assumes it as an obvious fact, and one presenting no great difficulty. It was to be expected that changing circumstances should produce changeable results expressed in variation. It can go no farther than this and give a reason why these variations should be in one direction rather than another, be in the interests of life rather than adverse to those interests. It

has at hand no causes for one result in variation rather than another. Physical forces hold fast to their quality through all vicissitudes, but circumstances are allowed, in a fortuitous way, to impress themselves permanently on organic forces; physical forces, in their external action, may be regarded as militant with organic forces, yet they are made the occasion on which the organic tendencies gain a new mastery; the organic tendencies cover the secrets of the problem, but these are assumed, and assumed as open to the favorable impact of external forces.

Says Mr. Wallace in the *Nineteenth Century*, "Variation is the mere absence of identity and calls for no farther explanation." This statement does not quite cover the case as involved in a theistic argument. If physical forces modify each other on their own plane, we have no new term. If, however, they affect each other in some peculiar way, the case is correspondingly altered. Sand is scattered on a metallic disk, the disk is thrown into musical vibration. The simple dancing of the sand calls for no explanation, but the curves in which it finally gathers do call for a special reason. That vital forms are modified by physical forces, as when a tree is injured by violence, or straightened by being bound to a pole, is a fact sufficiently obvious; but when, under new conditions, the plastic power assumes new and apt forms, we must either give a distinct reason for this fact found in the new circumstances, or we must add to the mystery of the plastic power the further mystery of suitable varia-

tion. Adding this power to the plastic power of life, we have by so much increased the creative thought which this expresses. When this variation takes place in certain individuals of a species in a given direction, and when these directions are maintained by a long series of profitable changes, we have added immensely to the significance of those vital powers whose chief laws are those of variation and inheritance.

The great fact of order as the final result is not to be hidden by the fact that many obscure forces take part in it. It is something quite beyond purely physical forces, and when we assume vital forces and vital laws, we wrap therein these grand issues. Indeed, the concurrence of so many things, the correlation of powers and conditions, and their constant reactions only show the world to be wonderfully organic by new increments of power. If Grant Allen is partially correct—and if he is not correct it is quite possible that some other like reciprocity of action will be discovered—in asserting the mutual dependence of bright hues in flowers and the color-sense in insects, and the growth of the two together in colors both in blossom and butterfly; and also the connection in a like way of the strong colors in fruits and the brilliant plumage of birds, the color-sense being first developed and then applied in sexual selection, we only see the increased force of primitive, concurrent powers, not their displacement.

The powers themselves are not thereby explained, they are only disclosed. In a theistic argument, it

is always possible to mine one stage deeper, so long as occult causes are evoked in the constructive work. The thought and energy of God are not banished; the method of application merely is made more fundamental, and so more truly omniscient.

There can no longer be any doubt that natural selection does expound many of the changes that have taken place among living things, more especially the inroads of one form of life upon another, and the disappearance of species. It should be borne in mind that natural selection, after the unexplained data with which it starts,—the germ of the seed—is a law directly in harmony with evolution. It explains the results which it covers by the necessary action of the external conditions under which they arise. It is, therefore, necessary to see how far it can discharge the labor laid upon it. It seems to us that only the merest fraction of the facts of the organic world can thus be accounted for, and those chiefly of obliteration rather than of construction.

(1) Natural selection does not explain how species, genera, families, orders, classes present themselves in all places and at all times in their systematic relations. Slight movement in all directions would not lead to this result, nor is it plain that natural selection alone, acting on the confused products of fortuitous change, would issue in this comparative order. This supposition implies that the practical exigencies involve the same relations, the same species and the same genera which are contained in a scientific classification. The parallel-

ism of these two disconnected principles of relation, to wit, vigor of life and coherence in a system, is not apparent, and cannot be conceded without a sufficient reason. So far, therefore, as the organic kingdoms do offer in their classification coherent results, these results are unexplained by evolution, as they have arisen under a selection that has had no reference to them. Varieties might have appeared confusedly in a thousand directions, and so confusedly that no linear relations would give them their present order. The method imposing the relations is not a scientific one, while the relations themselves disclose the framework of a scientific system.

(2) Nor can natural selection be relied on to do its work with sufficient decision and rapidity to turn into order the confused agencies acting under it. If we were to take even ten forms of life in the animal kingdom, and suppose these capable of indefinite variations under changing circumstances, without limit either in direction or in time, and that each resultant form carried with it the same liability, it is evident that natural selection must act with the promptness of a person to prevent immediate confusion. Image one of these ten forms as a centre from which radii pass out in all directions, indicating its possible lines of variation. Successive forms may take up at random these radii, and each form in each radius may become a second centre with its radii, and each form in each of these a third centre with third radii. Innumerable and inextricable relations would immediately follow, unless, without

reason rendered, we either define the lines of variation and check its rapidity, or we give an unwarrantable decision to natural selection. This rapidity of action natural selection does not manifest, but quite the reverse. The majority of slight variations would be relatively indifferent in the struggle for life, and those more significant would frequently require much time to establish themselves. Indeed, till we take in the truly organic law of heredity, there are present no means of holding any ground that may be gained anywhere in evolution.

Natural selection fails also to give due weight to some important considerations. A very influential element in a calculation of the chances of survival is that of the relative number of the varieties competing for existence. A species of inferior powers may prevail through superior numbers.* Natural selection, by its tardy and hesitating movement, would be a hopeless constructive agent in the many exigencies which the theory itself involves of constant and constantly modified changes with undefined directions and undefined rapidity.

(3) Moreover, neither the present life on the globe nor the record of previous life offers those innumerable shades of relation which the theory implies. Species are better defined than natural selection would lead us to expect, while neither the vegetable nor the animal kingdom presents sufficient remains of the abortive, semi-abortive and wholly successful forms which must have filled all open spaces to repletion. We have no traces of the great multitude which the throng

*Genesis of Species, p. 69.

and the tumult are alleged to have trampled out. The insufficiency of the geological record softens but does not remove the objection; (1) because present life—a safe type of all life—involves the same objection; (2) and because the record is more complete by far in its rational force than the relative number in its facts implies, since these facts, offered at random through the whole field, may fairly present it in its characteristic features. Our knowledge of Roman life is not measured by the ratio which the facts known by us bear to those unknown.

(4) Nor has natural selection that indefinite time which has been assumed wherein to work its changes. Physics, basing its proofs on three premises, the internal heat of the earth, tidal retardation and the sun's temperature comes to the conclusion that the period during which life has been present in the world cannot much exceed ten millions of years.* This is, then, proximately the time within which the shaping of the organic world must have been accomplished.

(5) The slightness also of the changes on which the theory of natural selection is made to rest in evolution is a grave embarrassment. Changes so slight, though lying in the right direction, would oftentimes have no sufficient potency. The balance of forces is not so nice, nor their condition so unstable as this prevalence of a slight advantage implies, and the more so as the advantage itself may have compensations and offsets. Moreover, slight changes, as parts of a complex whole, may

* Recent Advances in Physical Science. p. 165.

afford no immediate gain. This would be a very common case. Organs and functions are frequently so complicated, so involved with each other, that they cannot be analyzed into parts, or cut up into grades, each separately advantageous. Mr. Darwin, in his work on the Fertilization of Orchids, has given many of the curious ways by which this family of plants is fertilized through the intervention of insects. In his Origin of Species he brings forward this example: "This orchid—the Coryanthes—has part of its labellum or lower lip hollowed out into a great bucket, into which drops of almost pure water continually fall from two secreting horns which stand above it; and when the bucket is half full the water overflows by a spout in one side. The basal part of the labellum stands over the bucket, and is itself hollowed out into a sort of chamber with two lateral entrances; within this chamber there are curious fleshy ridges. The most ingenious man, if he had not witnessed what takes place, could never have imagined what purpose all these parts serve. But Dr. Crüger saw crowds of large bumble-bees visiting the gigantic flowers of this orchid, not in order to suck water, but to gnaw off the ridges within the chamber above the bucket; in doing this they frequently pushed each other into the bucket, and their wings being thus wetted they could not fly away, but were compelled to crawl out through the passage formed by the spout or overflow. The passage is narrow and is roofed over by the column, so that the bee in forcing its way out, first rubs its back against the

viscid stigma and then against the viscid glands of the pollen-masses. The pollen-masses are thus glued to the back of the bee which first happens to crawl out through the passage of a lately expanded flower, and are thus carried away. When the bee so provided flies to another flower, or to the same flower a second time, and is pushed by its comrades into the bucket and then crawls out by the passage, the pollen-mass necessarily comes first in contact with the viscid stigma and adheres to it; and the flower is fertilized."*

In this example, and in kindred ones scarcely less curious, the success of the whole construction depends on the completeness of the several portions. Any deficiency would be fatal. A trap cannot be replaced by one or two of its parts.

Imitation among insects is offered as an especially apt illustration of natural selection. It is open, however, to difficulties of this same character. The safety of an insect is secured by a resemblance to a twig, a leaf, or to noxious species. Such a resemblance would afford no protection till it was fairly well established. The first steps toward it would be inefficacious. The chances also of reaching a bizarre form by a series of slight changes under fortuitous causes are infinitely small. It is found, moreover, that this resemblance extends at times to minute details, and is much more complete than the end of protection would require. Similar relations exist between plants and insects, as in the orchids, where they serve apparently no purpose in the economy of the plant. When, therefore, natural selec-

* Origin of Species, p. 155.

tion is offered as a leading principle in evolution, it cannot be properly allowed to gather a few illustrations here and there, while it leaves a large amount of facts of the same nature in the same fields unexplained.

A protective variation may in many instances be so simple, as, taken by itself, to indicate no peculiar tendency; but often this will not be true. When Grant Allen attributes great results to the reactions of colors in flowers and fruits and the color-sense in insects and birds, we have a remarkable concurrence of powers, as well as each power, to account for—the first hues of flowers, the rudimentary perceptive power, the honey in the flower, the gains of cross-fertilization. Now, no law of chances will allow us to overlook this remarkable combination of tendencies.

(6) Changes often involve reciprocal modifications between different functions in the same individual; between different individuals, as parent and offspring, male and female; and between functions and external conditions. Natural selection can give no sufficient reasons to explain the concurrence of these reciprocal changes in time. An example of this character is the injection of milk by the kangaroo into the mouth of its young. The offspring is unable, from imperfect development, to suck. The parent is therefore endowed with this peculiar power, while the young are guarded from strangulation by the extension of the larynx into the nasal passages.*

(7) Akin to this objection is the objection that

* Genesis of Species, p. 55.

very remote parts of the vegetable and of the animal kingdom, parts so remote as to have branched very far back in development, yet present in some special organs striking resemblances to each other. Thus, that an ash-leaf maple should be found among maples, or a chestnut-leaf oak among oaks, is a result hardly to be anticipated. The gillaroo trout, the mullet and the toothless ant-eater have gizzards, an organ which lies primarily in the line of development of birds.* The eyes of insects and of crabs offer the same principles; so also the ears, and more manifestly the eyes of cuttle-fish, and those of vertebrates show a general correspondence. Yet it is quite beyond the range of chances to explain any considerable agreement between results so remote from each other in lines of causation. If we trace back these lines to the point of convergence, we shall find a common parent quite unlike either offspring. This disagreement between the two extremes has been the result of the protracted vicissitudes of entirely diverse developments, and reveals itself at length in two such different beings as a cuttle-fish and a man. Yet the eye, in its forms of structure, offers a remarkable exception to this divergence, and one not to be explained by natural selection merely. Nor can it be fairly said that the range of chances is narrow in the eye through the fixedness of optic principles. The ultimate physical result in vision is a molecular change in the brain induced by light. We are certainly not prepared to say that such a change can be in-

* Dissertations of Sir Charles Bell. PALEY'S N. Theology, vol. iv, p. 84.

duced in only two or three ways; nor to show how these ways have been hit on repeatedly in the animal kingdom.

The next law offered in equilibration is that of inheritance. This is to be accepted at once as a primary principle in the development of life. It does not, however, belong to evolution. Evolution has no light to bring to this law, nor is it a law identical with any previously existing physical laws nor in any way derivable from them. It is an inscrutable term which first makes its appearance among organic powers, and is part of that endowment which belongs to them as a distinct increment.

The same is true of correlation. A change in one portion of an organic being does carry with it correlative changes in other portions If the neck is lengthened, as in a giraffe, or the horns strengthened, as in an elk, the shoulders, the muscles, the legs, the lungs, the circulation must be modified to meet the changed conditions. But why? Simply because the constructive idea demands it. An alteration in one part of an engine does not carry with it as a mechanical fact the alterations of other parts. These follow only as mind supervenes and completes its changes under a well-ordered purpose. The law of correlation is one of the organic world, but it is not included in mere matter and motion, and does disclose the coherence of design.

The last law is that of use and disuse. Here again evolution enunciates the law without being able to claim it as its own. A glove is not thick-

ened by use, the skin of the hand is thickened. A pipe is not strengthened by drawing water through it, muscles are strengthened by the increased circulation that goes with labor. The engine does not absorb a wheel that has dropped out of the circuit, the living organism by atrophy reduces or wholly removes the superfluous part. Why this difference? This is the riddle of life. This is the question that evolution cannot answer. A mere statement of the law leaves it as one of those primary principles which make up the regimen of life and discloses it as a new thing in the world.

§4. In the enumeration, therefore, of the laws by which the organic world is brought forward, those forces which are the expression of existing physical conditions constitute but an insignificant part of the whole. The reasons, then, which make for evolution and those which make against it, are both very imperative. How shall they be reconciled? If we grant the presence of a spiritual agency the difficulty disappears. If evolution takes place along definite lines of growth with variable increments, every causal force is retained in free activity, and the continuity and systematic character of the results are fully explained. But this is theism, and the organic world calls for it by a large amount of the most important phenomena, intellectually considered, which are unexplained by any other view.

(1) The definite plan in leading and secondary divisions of plants and animals finds an immediate reason. The divisions and subdivisions of these

two kingdoms have the kind of regularity which belong to the upward branching of a tree, and call, therefore, in the same way for a controlling power. The wrecks of accident, the malformations of chance, the vagaries of fortuitous forces, which should so thickly strew the paths of evolution are either not present, or present only as the very partial miscarriage which attends on general laws. Evolution thus becomes what it ought to be, what life itself is, an inscrutable power pushing toward a distinct and desirable issue.

(2) There are species. It is found that variation, no matter how great its range in a given plant or animal, as in a geranium or a pigeon, has limits beyond which it cannot be pushed. The movement in variation may be likened to the vibration of a pendulum. The arc may be greater or smaller, but it is always related to a centre, and, as either extremity is approached, the motion is slower with more expense of power. It is true also that species, in relation to each other, are proximately barren. This law shows sufficient force to maintain the limits of species. Farther, secondary changes in species are not transmitted with infinite subdivision and in indifferent combinations, but tend to a certain entirety with complete transfer. Thus the offspring of pink-legged and yellow-legged chickens do not show a third combined color, but are divided between the two primitive colors. The children of parents, one of whom has more than the usual number of digits, will not subdivide the tendency so as to produce a deformity, but will either take it

up or leave it in a symmetrical or semi-symmetrical way. It is open to our daily observation that children, with transmitted qualities, show none the less a consistent personality, and not one of fractional composition merely. Thus even twins will possess very distinct characteristics.

(3) There are "sports;" that is, decided changes in forms of life, carrying with them all correlative and supporting conditions. A well known example of this was the Ancon sheep. The many new varieties of flowers and fruits are instances more or less distinctly in order. A distinct change of base is a real though a rare fact in the organic world, and to these changes we can set no definite limits. They are plainly neither slight nor fortuitous. This is all that the theory of rational evolution with variable increments calls for. This theory includes fully the facts explained by evolution, evades the objections that stand against it, and makes plain what evolution can not, to wit, order in the organic kingdoms, comparatively distinct and firm species, and changes within our own experience relatively extended and complete.

There are some kindred points that can more advantageously be considered in connection with animal life. The argument for the being of God can be farther fortified in this connection by presenting a few of the things which indicate the introduction of new tendencies in the vegetable kingdom, tendencies aptly related to the general structure of which they form part, and tendencies which embrace a distinct intellectual element. We do

not argue to the being of God from each bit of work as a separate contrivance, but from those broad relations which disclose the lines of rational construction. The world was not built part by part, and cannot properly be reasoned from in that way.

§ 5. The vegetable kingdom advances the argument we have in hand in two particulars: it shows powers responsive in quite a new fashion—a fashion of which physical forces give no suggestion—to external conditions, and powers that express in their operation strictly intellectual relations. The fundamental consideration, that the composition of powers which is constructive of each specific form of life and makes it a distinct potency in the world is something more than a group of physical forces, we can best advance and defend in connnection with animal life. We now simply specify a few of the more remarkable activities in this field.

The vegetable kingdom shows in its various parts an extended, delicate and peculiar sensitiveness to light. Roots shun it, stems seek it, leaves adjust themselves to it in one way, flowers in other ways, while tendrils, like roots, turn away from it. The light is the great constructive agency of this kingdom; the leaf recognizes the fact, and adjusts and readjusts itself, seeking those relations to the light which its own functions demand. If disturbed in this fitting position, it will, if possible, regain it. It is instinct with its own law and life. The root and the tendril, on the other hand, have another determination according to their functions, the one seeking nourishment and support, and the other

simple support. Light indicates open spaces, and both shun the light as offering nothing to them. The flower, with its rich colors, is interested in the light in still another way. It is coy or open in its presence according to its own variable habit. It flaunts itself all day long, or elects the morning or the evening light, or with rare timidity reserves itself for the night alone. The vegetable kingdom is thus sensitive in many new and delicate ways toward the light, in the fulfillment of particular functions and in the fellowship of its own beauty; nor are these sensibilities at all within the scope of physical forces.

A singular discrimination, combining somewhat that of taste and touch in man, is found in certain plants, more especially in sun-dews, pitcher-plants and fly-traps. We satisfy ourselves with the most concise enumeration of the points included. The subject is fully presented in Insectivorous Plants and in How Plants Behave. (1) A wonderful delicacy of touch is disclosed in the discernment of the smallest particles. (2) Their exact position on the irritable surface is recognized. (3) Their nature, as nutritive or otherwise, is perceived. (4) If the object is an insect, the plant suits its action to the thickness of the integument of the insect, and moves also more eagerly if it be alive than if it be dead. (5) It distinguishes between a momentary touch and a prolonged pressure, and between air and water and a solid substance. The plant is thus guided toward the right effort, and guarded against futile labor in a variety of

perceptions approximating those of a conscious sense.

A similar cluster of curious sensibilities and powers is presented by the tendrils of climbing plants.* (1) The tendril, by a revolution of its own, searches for the required support. (2) In doing this it avoids contact with other portions of the same plant. (3) It is sensitive to the slightest touch. (4) It discriminates between contact with water, another tendril of the same plant, and a foreign substance. (5) It avoids the light. (6) When it has secured an attachment it changes rapidly in structure, gaining strength and rigidity. (7) When it fails to find a support, it shrivels up and drops away. (8) In some instances, as in the Ampelopsis, it attaches itself to a tree or wall by a foot or disc.

There is another action of the tendril still more remarkable, by which it draws the vine closely to the object clasped, and at the same time makes the tie an elastic one. This is favorably seen in the passion-flower. When the delicate tendril has reached a support, and is extended to its full length, it initiates a movement whose mechanical conditions are very difficult. A small section of the tendril rises out of the general line of the tendril, and then begins slowly to revolve about that line. It thus forms a coil on either side, running in opposite directions. The formation of this coil is accompanied by a rapidly increasing rigidity of fibre. In some instances this movement commences at two points, the revolution of the two sections being in opposite

* Climbing Plants.

directions. If they were both to revolve in the same direction, no coil would be formed in the part of the tendril included between them. It is not easy to conceive of the method of action of those internal forces by which so singular, yet so specific and serviceable, an action is accomplished.

§6. But the powers in plants are not merely beyond the range of physical forces, they distinctly reach, in their results, relations of a clearly intellectual order. The first we mention is number. What reason can be given, based on the action of fortuitous forces, why a family should be carefully constructed on a numerical correspondence of parts, as the order Liliaceæ on the number three? Yet this is a fact so frequent in the vegetable kingdom as to add much interest and guidance to all inquiries in it. The most noticeable numerical relation in this kingdom is that involved in the arrangement of leaves. Leaves on a stem, scales about a disc, flowers on a disc are placed in spirals. These spirals are not the same, and are defined by the number of circuits around the stem as contrasted with the number of leaves in the circuits considered. We have thus the fractions one-half, one-third, two-fifths, three-eighths, each succeeding fraction being formed by the addition of the numerators and denominators of the two preceding ones, as the formulæ of these relations. The fraction one-half expresses one circuit and two leaves; the fraction one-third, one circuit and three leaves. The remaining fractions are combinations of these two. Two-fifths represents two circuits and five leaves; three-eighths,

three circuits and eight leaves. Strangely enough these fractions express also the ratios between the times of revolution of the planets around the sun measured in days. "The period of Uranus is half that of Neptune, the period of Saturn one-third that of Uranus, the period of Jupiter two-fifths that of Saturn." *

This law of phyllotaxis is certainly a curious and interesting one. It seems to involve a direct and subtile recognition of complicated numerical relations. It has been suggested that this disposition of leaves on a stem would secure the best exposure of each to the light, and, therefore, once occurring, could be laid hold of and perpetuated by natural selection. This is an explanation of the feeblest character. It hardly yields a shimmer of light. It gives no attention to the immense improbability that such an arrangement should occur, not merely in one plant, but generally, in various yet allied ratios, throughout the vegetable kingdom; and it attaches a preposterous value to it in the struggle for life. The leaves on a stem soon fall away, and are not so crowded as to make their precise arrangement a matter of moment in securing light. In most trees, owing to the irregular development of buds, all trace of the law disappears in the tree as a composite whole. In cones, as those of the pine, and in discs, as those of the sun-flower, the arrangement is one simply of interest to the eye, as much so as the corresponding lines of chasing on the back of one's watch. The scales and seeds in each case are set closely, and gain little in light by their pe-

* Religion and Chemistry, p. 299.

culiar position. We offer this phyllotaxis as an example of an extended numerical law with clear intellectual relations.

Time is also a notion of peculiar mental significance. Physical forces do not adjust themselves to the future, but to the present: while mind by pre-eminence shapes passing events in reference to coming ones. The future in its needs is made potent in the present hour. The vegetable kingdom is full of this anticipation, this immediate reflection of a coming exigency. The growth of one year is preparatory for that of the next year. By means of the sap which has been stored in its roots, the maple can put forth in the first days of spring a surface of foliage comparable in its extent and sudden unfolding to the unfurling of the canvas of a three-decker. An oak in two weeks will outline all over the tree the growth of an entire season.

The bud is expressly made ready in the fall for rapid work in the opening year, and very carefully packed in down, scales and wax, that it may pass safely through the winter. The seed involves a still more extended relation to time. This is seen in the very fact of a seed, in its methods of protection, in the nourishment with which its germ is provided, in means of dissemination, and in its oftentimes wonderful vitality. In many seeds this storing of food for the feeble plant is very obvious. The germ is well provided and launched with a keen forecast of the conditions of a prosperous voyage.

A good deal of emphasis has been laid on the

various ways in which seeds are provided with the means of dissemination. The eye is attracted to them because they are often so unique, so curious, and so mechanical. It is, perhaps, quite as interesting to observe that trees not so favored, and even burdened by the production of seeds especially sought after by animals, do none the less readily hold their own in the struggle of life. The birch, that will send its tiny fringed seeds sailing in all directions for weeks on the winds of summer, can not expel the oak, nor even the chestnut, from their due share of soil, though propagated by seeds costly in production and preyed on extensively by animals. The Impatiens, with its explosive seed-vessel, has yet a very narrow range in any given territory, and can not go beyond it. If it flings its seeds over the line of rich, damp and shady soil, they are simply lost.

The wonderful vitality of many seeds is a most influential fact. Seeds, as of the pine, remain dormant for many years, and then, under a change of conditions, start up in general activity, covering at once unoccupied fields with a forest-growth. It may be said that this vitality finds an easy recognition by natural selection. Certainly, but does that explain it? It simply restates, in another relation, the fact to be explained, to wit, that such vitality does exist and is efficacious. Its efficacy follows of course if the vitality is present, and the only solution which natural selection has to offer to this primary fact is, that it is one among the possible results of fortuitous forces, and this is a

solution of so singular an order that it renders henceforward any explicit explanations unnecessary. The one comprehensive remark applies equally well to every event. The time is not far off when such an exposition, repeated over and over again, against all probabilities, to account for the ever returning order and beauty of the world, will be regarded as a feeble child overlain.

Anticipation in vegetable life seems also, on the face of the facts, pervasively present in the provision made by it for the nourishment of animal life. This proof admits, however, of an easy evasion, by regarding the life as a causal sequence of the food, rather than the food as a preparation for the life. The relation is thus exclusively one of causes, and not of final causes. We cannot feel fully the inadequacy of this statement, till we have considered the world collectively, and seen how extendedly it is interlaced with provisions which exclude the supposition that they are present, one and all, without reference to the ends which they subserve; and till we have given proper weight to the fact that animal life is not a product of food, but that food is simply a condition to the independent powers expressed by it. Food must be before animal life can be, but this food, being present, does not carry with it the life that is to feed upon it.

There are some secondary provisions which are not open to this objection. Vegetable life accommodates itself to the wants of insects in a mechanical way very often, sheltering the young between the

layers of the leaf, or wrapping the leaf around them. The action at times is much more special, as in the oak-ball. When the oak-leaf is stung by the favored insect, it takes on a new form of growth which has exclusive reference to the wants of the animal. It results in a ball admirably fitted to the protection of the egg. The egg is left at its centre, and first enclosed with hard woody fibre. This is surrounded by a loose, moss-like growth, and the whole is enclosed with a tough paper-like covering. And so the ball, finished and sealed, hangs pendulous, waiting the new life.

§ 7. An equally remarkable and purely intellectual idea which pervades the vegetable kingdom is beauty, beauty in form, arrangement, color; beauty in detached parts and in masses. No considerable portion of this beauty admits of explanation otherwise than as a product of mind addressed to mind. It springs primarily out of the symmetrical tendency which characterizes nearly every form of life, and secondarily out of rare relations and combinations of forms and colors quite exceeding any purpose subserved in the mechanical disposition of parts.

The inexplicable symmetry which expresses itself in an elm, a pine, a spruce, is the grand emotional power of this great kingdom. To this there is added a more narrow and delicate symmetry and oftentimes an exquisite finish of parts in the outlines of leaves, in the forms and colors of flowers. Observe, for instance, the outline of the clover-leaf as further emphasized by the shades of color within

the leaf itself. Mark the very distinct and admirable symmetry which often characterizes the arrangement of stamens, when they depart, as in the Pentstemon secundiflorus from regular forms. The same fact also is expressed more showily in petals, as in the Leguminoseæ, or in violets, or in orchids. No one can have studied plants without feeling this inner sense of symmetry and relation which goes with them everywhere. How admirably are colors matched with each other in flowers! What rare plants do the Acquilegia cærulea and chrysantha of the Rocky Mountains become, their unique forms set off in purple and white, in straw color and yellow; the purity of the interior of the flower sustaining the brilliancy of its exterior. Nor is this relation confined to predominant colors, but extends to the nicest shading of colors, and sprinkling of colors one upon another. The last effect is often secured by the anthers of the stamens, as they lie on the petals beneath them. One may explain in part the general form of orchids by the domestic economy of the plant in the fertilization of its flowers, but he can not so explain the admirable finish and proportion of the parts, and the absence in them of anything merely mechanical. He may account for bright colors as attracting insects, and for honey as the price of labor, but he can not in this way cover up the emotional force of the flower in its very varied, very delicate, very beautiful combination of colors. The explanations afforded by evolution for the pervasive beauty of the vegetable kingdom are so utterly inadequate as to bear the

appearance of dullness or detraction. Either the emotional, intellectual element is not appreciated, or the merest fibre of thought is allowed to take the place in presentation of that closely woven web of beauty, that envelopes the world as an ample and rich garment.

CHAPTER VI.

PROOF OF THE BEING OF GOD FOUND IN THE ANIMAL KINGDOM.

§ 1. Every broad, inclusive question necessarily involves many secondary ones. The principles which guide our conclusions in one direction will modify them in many others. The opinion we have of the world as pervaded by a Divine Life will disclose itself in a much more narrow way in our view of the nature of all life. The characteristics of life are present in full force in the animal kingdom, and our estimate of that kingdom in its associated facts will be deeply affected by our view of life. Much more will its relations to the Universe and to the problem of creation be determined in our minds by this our estimate of its primary feature.

The simplest view of the living thing would seem to be that it is a peculiar combination of physical forces, and that these forces are sufficient to explain all the actions that belong to it. If we grant this last conclusion, the problem is not thereby solved, but evaded. Life, as a potency additional to the forces it guides, is not inferred from the actions of the living organism in their ultimate an-

alysis, but from the relation of these actions to each other and their complete and permanent concurrence in a common end. What, then, are the facts that in each case are expounded by the plastic power termed life? If we give the term its fullest range, it covers all those peculiar powers and the laws of those powers which belong to living things.

(1) It embraces primarily a controlling tendency to construct a complex specific organism through a series of changes known as growth. This tendency is present as a pervasive idea in every transition, giving it form and direction. This tendency includes many minor homologies, many obscure correlations, many delicate correspondences by which the symmetry and fitness of growth are preserved.

(2) Life covers also a subordinate tendency to watch over this organism in various ways, to institute action corrective of disease and restorative after injury. (3) It embraces a movement of propagation, by which the specific life, in completing one circuit of development, provides the conditions of second circuits, and these in turn of third circuits. Under this tendency of life to renew itself are contained (*a*) the law of inheritance, by which the special combination of forces which belongs to the parent reappears in the offspring; (*b*) the law of variation, by which these forces in their passage take on secondary modifications, more usually those of adaptation to new conditions; (*c*) and the law of atavism by which these modifications are dropped, when the provoking causes disappear.

Life cannot be regarded as a mere group of physical forces, because the phenomena involved in these laws—than which none are more plain and persistent—are left unexplained. The workmen without the architect do not account for the building, no more do mechanical, chemical, thermal forces account for the body of man without the plastic power that presides over its construction, repair and transmission. Neither can this plastic power be another force or other forces, introduced among the physical forces at work in the living body; and this, again, for the same reason, that a second gang of hands do not explain the edifice. Physical forces have definite centres and distinct forms of action, and no forces of this limited quality can cover the complicated and changeable phenomena of life, ranging progressively through long periods.

There have been two physical theories of life recently offered, one by Mr. Darwin and one by Mr. Spencer. They, at least, subserve this purpose, they are a tacit acceptance of the assertion, that life is a very undeniable fact with peremptory claims on our attention. It is not something which can be pushed into the background and forgotten. Both theories have originated under a necessity felt by their authors to ascribe these plain facts to some adequate physical causes, endowed at least with conjectural seats and characteristics. Darwin refers them to gemmules, indefinitely small and indefinitely numerous, which pervade all parts of a living body, represent all parts and are capable of

unlimited multiplication by division. These gemmules, omnipresent, and with a universal representative power are endowed with a tendency on each fitting occasion, in happy relation to the coëtaneous processes and successive stages of the living organism, to reproduce all its parts and organs.

The objections to this theory are so obvious, and so fatal, that they would hardly be worth rendering, did they not go further than the reduction of the theory to which they apply by helping to disclose the insufficiency of any purely physical hypothesis. (1) We have no knowledge whatever of any gemmules. There is not the smallest surface of fact on which to build the theory. (2) These innumerable gemmules are inserted into an apparent plenum. The living thing seems to be made up through all its tissues of known elements, and to give no room for a second, interior structure and circulation. (3) These gemmules are very foreign in their endowments to any known molecules, and are to that degree improbable. (4) Their endowments are of an intellectual rather than of a physical order, though they are to take rank with physical forces. These gemmules work together in a plan which involves parts separated in space, and stages widely sundered in time. No purely physical force is fitted to compass these extended and these variable intellectual combinations. There would be an end of all exact knowledge, if, without analysis or specification, we were at liberty to lump in this way needed agencies, and assign them an unknown physical status. (5) This theory reaches what explanation

it offers by the vicious process of a reduction and concealment of terms. We may as well call the living body as a whole a gemmule, and endow it offhand with all living powers, as to evoke these infinitesimals, and clothe them with a complete suit of supersensual properties. We hide in this way the problem in the dust of thought we have raised about it, we do not solve it. St. George Mivart, in his *Genesis of Species*, has pointed out another and more narrow series of objections to which this theory is exposed; it is enough for our purposes to see that it has no foundation in known facts, that it explains nothing, that it adds complexity to complexity.

The theory of physiological units by Mr. Spencer, has a slight advantage of simplicity over that of Mr. Darwin. It supposes the living body to be pervaded by indefinitely minute and numerous physiological units, each of which has a tendency to repeat the whole organism. The same objections hold as before. We have names and obscure ideas, but no things, and no correspondence with any known thing. The supposition has no working power, it is entangled at once in its own intolerable perplexity. We might as well try to conceive each brick, not merely in one building, but in an indefinitely extended series of buildings, endowed with constructive properties by which it should take its own place and help to assign every other brick its place in the successive structures, and should, at the same time, pass its properties on to all other bricks, taking part in this reel.

Not only is this theory of physiological units ab-

surdly beyond experience,—and therefore in Mr. Spencer's favorite word of censure wholly "inconceivable"—but it is in equally flagrant violation of the canon of the fewest causes. Before the theory, we had but one gross living body, inscrutably endowed, after the theory we have in that same body well nigh an infinite number of bodies, endowed after the same marvelous fashion, and still we have no way of harmonizing their actions one with another in the construction of living things. We have a million architects each working—how, with or without reference to the others?

When we are not able to render sufficient or harmonious reasons for any facts, our next best resource is to state those facts in their simplest form, and leave them without any verbal concealments. Mr. Spencer seems to think, strangely enough, that his own method approaches this result. "There is suggested the hypothesis, that the form of each species of organism is determined by a peculiarity in the construction of its units—that these have a special structure in which they tend to arrange themselves, just as have the simple units of inorganic matter. Let us glance at the evidences which more especially thrust the conclusion upon us. A fragment of a Begonia leaf imbedded in fit soil and kept at an appropriate temperature, will develop a young Begonia, and so small is the fragment which is thus capable of originating a complete plant, that something like a hundred plants might be produced from a single leaf. * * * What now is the implication? We cannot say that in each

portion of a Begonia leaf and in every fragment of a Hydra's body there exists a ready-formed model of the entire organism. * * * We have, therefore, no alternative but to say that the living particles composing one of these fragments, have an innate tendency to arrange themselves into the shape of the organism to which they belong. We must infer that a plant or animal of any species is made up of special units, in all of which there dwells the intrinsic aptitude to aggregate in the form of that species, just as in the atoms of salts, there dwells the intrinsic aptitude to crystallize in a particular way. It seems difficult to conceive that this can be so, but we see that it *is so*. Groups of units taken from an organism (provided they are of a certain bulk and not much differentiated into special structure) *have* this power of rearranging themselves; and we are thus compelled to recognize the tendency to assume the specific form, as inherent in all parts of the organism."*

The passage is open to two observations. First, the induction is quite too broad for the premises. What is true of the Begonia and Hydra is not true of a large share of living things. Yet these narrow facts are taken as typical in a theory which is to cover the whole field to which they belong. Secondly, the hypothesis is in no sense a statement of the facts, but is in every part of it induced upon the facts. What are the simple facts? Are they not these? The living substance in its growth —a growth that is variable in different species in its antecedent conditions—does, as a whole, and in the

* Principles of Biology, vol. i., p. 180.

relation of each part and stage to the whole, put forth its organs and functions in order as they are included in the type. That these tendencies lie latent anywhere and everywhere in the molecules embraced in the organism, is a supposition added to the facts under the pressure of the idea of causation. We might as well affirm, as far as the facts themselves go, that the peculiar tendencies are to be referred to the new atoms taken on, as to affirm that they belong to the old atoms receiving them. The two are apparently partners to one inscrutable transaction. Or we may conclude that the new disposition is found in neither set nor in both sets of atoms as a primitive endowment, but that, as a superior plastic power, it acts upon both under given conditions. The facts are simply those of a serial development taking up a given order with no disclosure whatever of the seat of the presiding power beyond that contained in defining the field of its operation. This field is the entire living organism. Any effort to conceive new constructive forces, or assign them centres, is purely an hypothetical one.

Let us take any form of life, as the growth of an oak. How preposterously complex and obscure do the facts become under the physical method of regarding them. The acorn is thought to contain in some latent form the constructive forces that are to express themselves in the oak, and then, by a remoter implication and deeper involution, the constructive forces that are to come to the light in all subsequent oaks. The acorn is thus imaged as holding in transition vital forces that may, in their ex-

pansion, spread over a continent. Under the notion of causation, which alone gives rise to this conception, either the vital forces of the acorn are capable of indefinite multiplication in other acorns, equally well endowed with itself; or subsequent acorns steadily subdivide these vital forces; or vital forces can be indefinitely increased by a constant transmutation into them of physical forces. Each branch of these alternatives is incomprehensible. The first violates the law of causation, the effect being greater than the cause; the second is at war with experience; and the third carries with it no proof. That relatively crude physical forces can be translated directly into all the manifold energies expressed in life, is an exceedingly bold assertion. When an acorn dies, what becomes of its vital forces? This is a most pertinent question, if these forces are forces, that is, distinctly revealed physical energies. The fact that germs, or parts of living organisms, are the only known conditions of propagating any form of life, is significant in this connection. That this law is very nearly universal none can doubt, and the balance of evidence still remains, that it is a law without exception. Proof to the contrary has so uniformily given way before more thorough methods, that a very strong presumption lies against any evidence that may still be offered. It is certainly a law, probably the absolute law of life, that its plastic powers work only along continuous lines. Simple physical forces show no relation to any form of life, except as they touch these lives. They are then drawn into the service of this presiding presence,

but no proof can be offered that they themselves either pass into this power, or are nourished by its decay.

If we take this fact of life, in its circuit from the acorn to the oak bearing many hundred acorns, what is the simplest analogy, the one most closely allied to some fact in our experience, by which we can explain it? The physical forces present throughout, and present under their own activities, are drawn from the great reservoirs of force about us. There is no mystery here. The plastic power, on the other hand, seems to be simply a shaping power with no physical form or fixed centre. It accompanies a given organism, pervades it, changes with it. In other words it is more allied to mind than to matter, and ultimately becomes the basis of mind. The fact, then, most analogous to it, is the central one in human experience, to wit, the influence which the mind of man exercises over his body. This fact may in some sense be said to be the same fact with that of life, lifted to its highest terms. Here is the same pervasive, subtle control; the same changeable power of modification; the same sort of flexible limits within which the constructive energy is contained. The two facts are not identical, but they are analogous. Life has, as a plastic power, close affinity with spirit.

By far, then, the most simple and sufficient theory of life is the spiritual one. Life is a plastic power, not a physical force, nor a group of such forces. It is something which neither issues from the world of forces nor returns to it. The living man is indebted

to nature only for the subordinate forces in the service of the vital principle, and these alone the dying man restores to nature. The special plastic power comes under laws, it propagates its kind under laws, and departs under laws; but in coming, it took nothing from the physical world, and in departing, it leaves nothing to it.

§2. But grave objections immediately arise to this view in all minds which have drawn their ruling conceptions from physical facts. Such persons regard law as the one fixed intellectual term in the Universe, and are accustomed to refer law exclusively to the permanent character of physical forces. The moment, therefore, that the lines of physical causation are broken or transcended, law and order seem to them to give way. So strong is this sentiment, that it is constantly resulting in an effort to reduce all mental activity under physical conditions; much more, therefore, does it make a determined effort to resist the introduction of any spiritual element among physical forces. This sentiment we believe to be sound in what may be called its instinctive assertion of law, but to be quite astray in its premises. Will, and that too in its willful and wayward form, is taken as the type of spirit, and the spiritual is then cut down to its lowest terms with the hope of its ultimate exclusion from assignable causes. We ought rather to recognise reason—the very reason that leads us to take such satisfaction in law—as the supreme power in spirit and the ultimate ground of order. We would refer matter in all its fixedness to a Divine Spirit, be-

cause it is built together by laws which are the frame-work of a rational Universe. Whether we regard the rational movement of things as the source of the higher reason, or the higher reason as the fountain of this pure stream of law, reason itself should not be to us lawless, but every way the reverse.

These physical laws, then, rooted in material things and conformable to reason, are not the only types of order. The laws of thought or logical laws, the laws of feeling, the laws of rational action, are as strictly laws, have the same comprehensible coherence, as the lines of causation; yet they are not lines of causation nor directly dependent on them. If life is a plastic power, it does not thence follow that it will act without law. Its laws may be more complex and pliant than those of simple forces, but they may be as wise and real. The mind of man is misled in its estimate of reason because its own rational activity is instituted under a very restricted survey of consequences, and is, therefore, more or less vacillating and unsafe. His purpose, like the wind in any one locality which seems to blow where it lists, is moved by immediate motives, and thus appears to lose the scope of general law. But reason, precisely in the degree in which it is comprehensive, becomes, in its action, firm and consecutive. Its pliancy to passing conditions and its pursuit of remote ends are harmonized with each other, and settle down into laws like those of variation and heredity. The plastic powers, then, known as lives, if they have a spiritual origin and are spir-

itual entities, are not, therefore, lawless. They are themselves products of reason, and enter into a complex plan, also the fruit of reason. They must, therefore, conform to their own purposes and to their dependencies. Dependencies wisely instituted are not to be momentarily set aside. This would be to undo the work of reason. Hence the laws of life should have in them what they actually have in them; first, the firmness of a general purpose protractedly pursued, and secondly, all the limitations and modifications which the physical conditions of the world, in whose construction they take part, impose on them. Every term in reason is a condition to every other. Now is not this what we find, laws of life and lives themselves shaped toward beneficent and comprehensive ends, and these laws and lives modified by physical circumstances in such a way as to keep the lines of development harmonious? If we could freely accept both these factors, to wit, peculiar primitive tendencies carrying their own laws with them, and external circumstances offering to these powers new conditions of action, our minds would be prepared for the simplest statement of the facts and the relations involved. And this, after all, is the sum of science. It is certainly remarkable that after such strength has been expended in driving out a spiritual agency, a new form of words is so often hit upon by which it finds readmission. Thus at the present time intelligence, as a potential factor, is carried far below consciousness, and finds entrance as some strange, inscrutable term wherever its work is seen.

Hæckel can talk of the atom-soul, plastidul-soul, cell-soul, while the simplest molecule of protoplasm is endued with sensation and motion. Thus each petty citizen in times of anarchy, bears off the stolen spoils of a great king.

It thus becomes plain why monsters may appear in any line of growth. If there are laws and so lines of growth, and if these lines run parallel with physical activities in interaction with them, this result is inevitable. To bring forward the monster as a proof against Divine Wisdom, is to affirm that lawlessness is better than law, as the monster is a product of law in one or other of its cross relations; is to affirm that special ends sought by special means are preferable to general ends pursued by general means, and that too, though the field cov ered is one made ready for the common activity of many intelligences. Those who find an objection to the wisdom and grace of God in the monster are generally those who lay most emphasis on the rational element of law in the Universe, yet, in this objection, they quite lose sight of this their fundamental principle. In the degree in which law, order, reason are reasonable, in that degree is the monster, the product of partially colliding laws, inevitable. It is the nature of laws in evolution, however constructive they may be, to put upon each other limitations. If railroads cross each other, there may be an accident.

§ 3. The unity of action in the world, notwithstanding the remoteness from each other of the agents which concur in the given results, is strik-

ingly seen in the relation of animal to vegetable life, and of the two to chemical affinities and physical forces. Animal life is directly dependent for its conditions on three terms: the sun's rays, the strength of chemical affinities, and the green tissue of plants. The last, the laboratory of the physical world, brings together the other two terms, actinic energy and simple compounds, in such a way as to give rise to the reactions needed in the construction of organic compounds. These compounds are as a class exceedingly complex in the atomic structure of their molecules. The molecule of water is composed of three atoms, that of albumen is put as high as 2316 atoms.

The four chief elements in organic compounds are carbon, nitrogen, oxygen and hydrogen. These are in their combining powers respectively, quadrivalent, trivalent, bivalent and univalent. "Carbon is peculiarly the element of the organic world, for, leaving out of view the great mass of water which living beings always contain, organized material consists almost exclusively of carbonaceous compounds." * The complexity of these compounds is especially due to carbon. Not only has carbon the large combining power indicated, its atoms combine "among themselves to an almost indefinite extent." "The carbon atoms, however, not only unite with each other in large numbers, but form groups of great stability, which, in organic compounds take the place of elementary radicals." † A group of six carbon atoms may, according to its

* New Chemistry, p. 292.

† New Chemistry, p. 302.

method of combination, leave open 14, 12, 10, 8, 6, 4, or 2 affinities. The complexity and variety of organic compounds are due to the original characteristics of the elements that take part in them.

These organic compounds are termed higher than the simplest inorganic ones into which they are constantly passing by decomposition. The language is figurative, finding its significance in the fact, that force is expended in dissolving the simple compounds and constructing the more complex ones. This force remains as available force or energy in the organic substance, and reappears in its reactions. As these molecules consume force in their construction, and yield it in their reactions, they are said to be higher than the stable inorganic compounds into which they are constantly lapsing. It is a lift in nature to form them, demanding energy; it is a fall in nature to decompose them, yielding energy.

The forces drawn upon in this construction are those contained in the sun's rays, and the surfaces at which these forces become efficient for their work are those of the green tissue of plants, more particularly of leaves. "It is a very wonderful thing that those so-called chemical radiations from the sun which are most effective in producing the decomposition of carbonic acid by the leaves of the plant are the very rays which are most absorbed by the green tissue." *

The force expended in the leaf in the decomposition of carbonic acid gas and water, and the conversion of the material so provided into starch, may be better appreciated if we remember, "that the

* Recent Advances in Physical Science, p. 149.

amount of energy required to decompose a pound of water into its constituent gases would be adequate to raise a weight of 5,314,200 pounds one foot high." * A cubic foot of cannel-coal, whose storehouse of energy has been filled by sifting out the forces of sun-light through green tissue, "contains sufficient energy, if wholly utilized, to raise 732,000,000 pounds one foot." †

Animal life depends on vegetable life for those organic compounds, stored with energy, which are its food. Animal life has occasion to shift these compounds—metastasis—from form to form in its own service. In this constructive work a portion of the material continuously drops from the higher to the lower plane. In this fall it yields the energy which is needful for the transformations within the animal, and maintains its vital heat. Thus the animal organization acts as a water-ram to the forces which flow to it from the vegetable kingdom; it lets slip a part from the higher level, and so gains the force to use the remainder on that level or to carry it still higher.

In this grand circulation of the elements, the simple inorganic compounds lie at the lowest level. These, by the vigor of the sun's rays put to service in the green tissue of the vegetable kingdom, are decomposed and reconstructed at the higher level of organic compounds. In dropping thence they yield their acquired energy in the service of animal life. We have thus, in this circuit of life, what we before had in the water-circulation of the globe.

* New Chemistry, p. 99.

† New Chemistry, p. 206.

The sun lifts in evaporation the reservoirs of snow and rain, and these, in gentle subdivision, descend again in the continuous service of all living things.

Carbonic acid gas and water are the simple compounds with which this circuit commences, as in the leaves of the bread-tree: and these also are the simple substances with which it closes, as in the lungs of man. Carbonic acid gas and vapor steal back, almost imperceptibly, after each organic reaction into the grand reservoir of the atmosphere. Thus the tangible organic world is built up from the relatively intangible gaseous world, and so partakes in the ease, subtlety and pervasive presence of its constructive processes, in the mobility of these most mobile forms of matter.

Not only does the vegetable kingdom thus become the antecedent term to the animal kingdom, its work-room; the animal kingdom, by virtue of these changeable compounds passed up to it from beneath, is able to reach a versatility of forms, a freedom of movement, a pervasive force of life wholly unknown to the shrub and tree. Organic compounds are in relatively unstable equilibrium, especially those which are most serviceable as food. They are colloid, not crystalloid, in form. The slight affinities and slight coherence of their atoms keep them trembling on the point of dissolution. In addition to this colloid form, by which the least stir of change is rapidly diffused through the permeable mass, animal organisms contain a very large amount of water, adding to the mobility of their parts. These facts unite to make organic material

wholly pliant under the plastic power of life. If we could fully conceive its circuits, there is nothing open to our senses so wonderful as an animal organism—for instance, the human body. It is physical, yet so far from physics; explicable, yet with so many incomprehensible terms; complex, yet so concurrent in its parts in a way most direct and simple; restful, yet each instant full of invisible action and a life that never wearies. The food, through primary and secondary channels, under forces the most simple and forces the most subtile which the physical world offers, finds its way to every most minute part of the body; it there passes into compounds of great variety, and yields energy for the performance of functions very diverse from each other, yet most intimately united in their results. The processes of destruction and reconstruction are coëtaneous, and minister to each other in constant reactions through the entire circuit, the gas that passes from the lungs yielding in its very last change one more unit of heat.

In the animal, food is quickly converted into fluid, and in the circulation of the blood carried to every part of the body. In these several parts, it is transformed into a great variety of solids, which, in turn, as growth proceeds, lapse once more as waste into the blood, or pass off in other ways as fluids. Thus an unending current builds up and takes down the body of the animal and provides alike the energy for both results.

The superintending life, as an invisible presence, presides over all, knits together the parts in an im-

mediate service, and bears them along a distinct line of growth to remote ends. Such is the marvel of the human body, even if we overlook the greater marvel of a conscious and partially independent life working in it and through it. The living body is thus the most complete revelation of visible and invisible, palpable and impalpable terms in perpetual reaction for immediate and remote ends, the whole pervaded by a supreme spirit to whose service every function, without abrogation of its own law, is submitted.

It may also be fittingly put as a special point in this unity of physical forces and vegetable and animal life, that most vegetable products, as wood, are under ordinary conditions so much more stable than most animal products, as flesh; and that the energy of fuel, by an arrested process of decomposition and recomposition, can be made to take so permanent and serviceable a form as coal, one element being held back from a simple and stable combination. We may also include the temperature at which the reactions take place in the animal, and the complete control of the plastic power over them.

A unity like this of two kingdoms, or rather, all kingdoms, a preparation like this, so far-reaching and so complete of one thing for another, go as far as it is possible for external presentation to go in indicating the presence of a thoughtful purpose. It is somewhat the fashion of our time to disparage the position of man in creation, and to discredit any reference of things to his wants. But we are able to see that the foundations of his well-being and

power, looking upon man simply as the supreme animal life, were laid in the earliest physical forces, and were steadily built on in each successive stage of development. We have to choose between regarding results, thoroughly and continuously provided for, as contemplated in this concurrence of causes, or regarding the most complete order as the accident of causes united with no reference to it. As there is but one universe and one line of evolution, and not an infinite number of each, this last conclusion has no color under the law of chances. The presumption against it is simply immeasurable.

As the body of man can be regarded as a kind of engine in which food is burned, it is interesting to compare it with other engines in the economy of its consumption. "We have not yet succeeded in applying more than about one-twentieth of the energy stored up in coal to mechanical work." * A steam-engine is thus a most wasteful machine. "Joule, at a very early period of his investigations, pointed out that not only does an animal much more nearly resemble in its functions an electro-magnetic engine than it resembles a steam-engine, but he also pointed out that it is a much more efficient engine—that is to say, an animal for the same amount of potential energy of food or fuel supplied to it gives you a larger amount converted into work than any engine which we can construct physically." † We shall feel the force of this assertion if we remember the inner organic motion, the outer muscular motion, and the

* New Chemistry, p. 206.

† Recent Advances in Physical Science, p. 150.

even temperature—the direct occasion of much pleasurable sensation—which attend on animal life as in man, and also recall the small amount of food, taken at somewhat remote intervals, which maintains this expenditure. From this gross amount is also to be deducted those crass portions which are rejected at once, yielding no energy to the animal mechanism.

§ 4. The extended and coherent relations of one thing with another, which, to the human mind, constitute the peculiar force of the world, pervade all animal organisms. They are full of very various and very observable symmetries. These are interior and exterior. The vertebræ, as of a snake, ingenious and admirable in themselves, are modifications of one pattern according to the position of each. This correspondence, with bold variety in form and a frequent change of a number, characterizes a grand division of the animal kingdom. A like correspondence of bone with bone in office, position and form, and of tissue with tissue in structure and office, is found everywhere in animal life. The laws which pervade the constructive process are of the most fundamental order. A more obvious example is the circular symmetry of lower forms of animal life, and the bilateral symmetry of higher ones. There is the greatest variety in each of these types, nothing remaining firm but the simple idea of the appropriate symmetry. The snail, as it drags its shell behind it, exhibits both forms of symmetry. Nothing is plainer than that the plastic power of life is always working under an idea with

both general and specific bearings, as much so as an architect who builds a peculiar house under a given style and according to a national method.

Even so secondary an element as color is, in its arrangement, as in the marking of fishes, insects and birds, often conformed to complicated and beautifully symmetrical patterns. The great variety in this symmetry, and the occasional departure from it, both in form and in color, show that it is no necessity of the physical forces involved; nor does it, in many of its details, seem to be essential to the maintenance of the life it accompanies. That this symmetry is not the product of any mechanical equilibrium of forces is also shown by the fact, that the inner symmetry, as in man, is by no means as complete as the outer symmetry. While the one is absolute, imposing perfect order, the other easily gives way to any convenience in the forms or functions of organs.

The purposes, both of science and beauty, are admirably combined in this symmetry and in the departures from it. The skeleton well represents the fundamental oneness and the multiform relations of the prevalent idea; the position of interior organs discloses the freedom and constructive force of the plastic power; the detailed and exact correspondences of the superficial finish reveal the force of the intellectual idea of symmetry.

It does not suffice to say that this beauty is incident to service, and that the service is the result of natural selection, for we do not find those multitudinous unsymmetrical productions which the theory

implies, and which have been crowded out by the mere push of symmetry as an element in physical power. Life invariably shows, even in its rare grotesque forms, a tendency to symmetry, and in the vast majority of cases a very complete tendency.

Closely akin to this law of symmetry, but somewhat more than it, is the often marvelous beauty of the animal kingdom. While the basis of that beauty is the harmony of structure involved in symmetry, it is aided by many secondary things. It is not simply the correspondence of the two halves of the body that makes man beautiful, but what each half is in the more delicate details of form and texture. The human hand, in its proportions, pliability, fineness of structure and fulness of life, is a most exquisite product to be shaped in crass matter. The human face—furnished with its vigorous senses reaching to the stars, in turn looking out of the depths of space and the silence of eternity; its features, the seat of versatile thought, the medium through which the soul is flashing all the changeable lights of emotion; the voice, meanwhile, uttering like a chorus in articulate sound the burden of this passion,—is that hand-breadth of surface in which two worlds touch each other, and blend at the zenith of beauty.

There has been an effort to account for this perfect finish in form and color of the animal kingdom by sexual selection. The cause is very much too narrow. Sexual selection, taken by itself, is worthy of consideration; but as offering an explanation of the beauty of living things, it falls ridiculously

short of its task. The theory seems to forget that there is the same beauty in the vegetable kingdom, the same beauty in lower as in higher animals, the same beauty in the inner surfaces of shells as in their outer forms. It seems to forget that there is really no proof that even in the higher forms of life there is present a perception of beauty, or any approach to that nice criticism of details out of which alone progress could come. If we recognize the simple fact, that beauty must usually be associated with vigorous lustful forces—since it like these forces indicates the predominance of life—we shall understand that even in those comparatively few cases in which sexual selection seems to be influenced by beauty, it is really proceeding on a plane of much lower and more physical endowments. The mate is not selected under the critical eye of taste, but under the eager, pushing appetites, that go with life, and are called out by life.

The beauty of the animal kingdom simply adds itself to that of the vegetable kingdom, and the two supplement that of the inorganic world. Thus all things stand together, the walls, columns and vaulting of a matchless temple.

We shall mention but one other special relation, that of animal life—indeed of all life—to man. We shall not enter into the general relation of extended service; this service is too common and constant, too much a matter of course, to admit easily of a fresh impression; we shall direct attention simply to the laws of heredity, and the way in which they put the various forms of life at the disposal of man.

The law of variation enables him to improve those forms in which he is more immediately interested, while the law of inheritance enables him to hold fast any gains he may have made.

Whether it be true—as some seem to think with much reason *—that the plants and animals, which are more directly valuable to man, are peculiarly variable; or whether it be true, that variability is a generally and evenly diffused tendency, and has simply been developed more actively in domestic plants and animals, it is an obvious fact, that the mastery of man over inferior life is greatly enlarged by these laws, and that it turns on a nice balance between the two. More ready variation would be attended by a corresponding liability to the loss of gains; less ready variation with more difficulty in making those gains. Life yields itself to the skillful touch of man, as good stone to his chisel. It is neither too obdurate to receive his thought, nor too pliant to retain it. The result is that garden, flower-garden, orchard, stock-yard and stall are filled with every form of life that is needed either to minister to the necessities or pleasures of man, and that they all yield to his progressive desires in a wonderful way. At no point is it more manifest that man is the master of the world, the heir of all its gifts, and waiting to be made richer by each new evolution.

When we observe the general and extended variation of those plants and animals that directly minister to man,—a variation however, not universal as shown by the guinea-fowl, the peacock, the goat,

* Natural Theology, CHADBOURNE, p. 164.

the ass—when we further observe that this variation is toward man and initiated by man, we have occasion to acknowledge either a specific fact or a general fact of great significance in reference to his present, and still more in reference to his future, wants.

§ 5. Having reviewed some of the primary relations of animal life, it is not necessary to our argument to dwell on its special forms or innumerable adaptations. These serve their purpose only as parts of one great picture, only as the admirable details of a work remarkable for its systematic form. This portion of natural theology can hardly be more skillfully presented than it has already been presented in the work of Paley. The need of drawing attention to these special relations of life is passing away. Many works of science have shown the whole kingdom of life to be full of adaptations—often in a peculiar and curious way—to the wants of living things. The argument for the being of God is not thought to fail because of the narrowness of these, its premises, but because, in their acknowledged multiplicity, they are taken up under general laws, themselves referred to physical forces. The most apt descriptions of special forms of life would not now materially aid the argument we have in hand. The most they can do is to deepen the popular impression. We shall satisfy ourselves with a single illustration.

The camel is an animal of especial interest to man, not merely because of its remarkable adaptation to peculiar conditions of life, but because this

adjustment fits it to render a very important and exceptional service to man, because its history is so closely associated with human life in the oldest historical portions of the globe, and because it has not been found wild within the memory of man, but has been wholly taken up in his labors. The deserts of Northern Africa and Eastern Asia, so long traversed by the migrations, armies and commerce of the oldest historical races, have given a demand for a form of animal life admirably met by the camel, "the ship of the desert." The history of the race could hardly have been what it is without this adjunct.

Though the camels employed in carriage are comparatively slow, the dromedary, a lighter and more carefully bred variety, obtains the speed of nine or ten miles an hour. The camel thus combines both branches of work, the heavy and the light.*

(1) The most remarkable endowment of the animal, fitting it to its peculiar life, is its power to take into the stomach a supply of water in anticipation of future want. This amount is sometimes as great as twenty gallons. The water remains in the stomach for a time unaltered, and is passed into the system as called for by the automatic sensibilities. There is disagreement of opinion as to the form of the physiological fact, but not as to the unusual endurance. The camel can also scent water at the distance of a mile.

(2) The foot of the camel is as directly shaped to a desert soil as a snow-shoe to snow.

* Bible Animals. Dissertations of Sir Charles Bell, supplementary to Natural Theology.

"The mixed stones and sand of the desert would ruin the foot of almost any animal, and it is necessary that the animal should be furnished with a foot that cannot be split by heat, like the foot of a horse, that is broad enough to prevent the creature from sinking into the sand, and is tough enough to withstand the action of the rough and burning soil. Such a foot does the camel possess. It consists of two large toes, resting upon a hard elastic cushion, with a thick, heavy sole." * This foot makes a sand-shoe. It spreads as the pressure comes on it; it contracts and easily sheds the sand as the weight is removed. Its elasticity preserves it from the bruises of blows so severe against the stones lying loose and hidden in the sand.

(3) The mouth of the camel is so tough and its digestion of so vigorous a character, that it can find food in the driest and most thorny plants. "It feeds abundantly on the thorn-bushes which grow so plentifully in that part of the world, and though the thorns are an inch or two in length, very strong and as sharp as needles, the hard, horny palate of the animal enables it to devour them with perfect ease. It manages to browse as it goes along, bending its long neck to the ground and cropping the scanty herbage without a pause. Camels have been known to travel for twenty successive days, passing over some eight hundred miles of ground without receiving any food except that which they gathered for themselves by the way."†

* Bible Animals, p. 239.

† Ibid, p. 238.

(4) It has a provision round the eye for ridding it of particles of dust, and the power of closing its nostrils against the clouds of sand which constitute the most urgent annoyance and the most threatening dangers of the desert.*

(5) So universally valuable is the camel that even its dung is important to its owners. "Owing to the substances on which the animal feeds it consists of little but macerated fragments of aromatic shrubs. It is largely employed for fuel, and the desert couriers use nothing else."†

These are some of the direct provisions by which the camel, among animals, is fitted for so difficult and needful a service as to make its possession a necessity to the intercourse of extended portions of the globe. To these unusual utilities are added the full circle of secondary ones, as the value of its flesh for food, its skin for leather, and its hair for brushes and thread, for coarse and for fine fabrics. Whatever influence men may have had in completing this unusual combination of endowments, this very influence is a part of the marvel, and found its first and essential term in a primitive constitution already very peculiar. The extreme and correlated development of these several qualities in the camel, separating it so widely from other animals, puts it beyond the explanation of natural selection. Not only is the concurrence of such unusual qualities in the last degree improbable as a chance effect, there would be no sufficient occasion for this growth in the life of a wild animal. The camel, as a species,

* Dissertations of Sir Charles Bell, vol. iv., p. 275.

† Bible Animals, p. 241.

would have escaped the pressure of surrounding life long before so far off a point of advantage had been gained. The pressure within the species could hardly have been so extreme in its native state as it became when the animal was burdened with a labor quite beyond that of providing for its own life. If the species, by a pressure within itself, was pushed continuously along this protracted path of development, the fact would imply a series of catastrophies of indefinite number, which only the best endowed animals were able to survive.

If we consider the hardness of the conditions of life which fall to the camel, its dreary surroundings, and its severe menial service, we shall easily accept the peculiarly homely form of life which it presents. It would be unkind to ask the donkey, as he crops the thistles of a common, or the camel, as he browses on the thorns of a desert, to be a cheerful and beautiful beast. The dolorous bray of the one and the querulous complainings of the other are not unsuited for the hard and sordid life they lead. That animal is unfortunate which is laden with the sins of the lowest of men.

CHAPTER VII.

PROOF OF THE BEING OF GOD FOUND IN THE RATIONAL KINGDOM.

§ 1. The world is referred to God as its author because of the rational relations it contains. That relations so numerous and so extendedly concurrent should have arisen without reason seems to be an assertion in the denial of the distinction between the rational and irrational, between things ordered by thought and those left to accident. It is not easy to see how reason could have framed a more orderly product than this, which atheism refers to irrational causes and combinations. As we approach man, the one well-known typical term in the rational kingdom, the proof for the being of God ought to increase in clearness. If the world is constructed under a purpose, a large part of that purpose must be found in the relation of the world to man. His endowments and his discipline, therefore, should be especially explanatory of the make-up of things.

While it is unwise, when we wish to offer an argument in the form most favorable for general acceptance, to claim more ground than is necessary for the superstructure, it is equally unwise, when

we wish to so build our proof that it shall stand, to claim less ground than the strength of the edifice requires. The present scepticism of the world is the logical outcome of Empirical Philosophy; it cannot be fully met on any theory of the human mind short of that involved in Intuitive Philosophy. Undesirable, then, as it may seem to be, to interlock the proof of first truths in religion with our philosophy, the result is unavoidable. Doubt, difficulty, sweeping denial have arisen from one style of philosophy, and are all in due order contained in it, when its premises are coherently unfolded. We must, therefore, state the fact clearly, and indicate the points at which the divergence arises. If the mind is in some fashion like a blank sheet of paper, as one great founder of the Empirical Philosophy would have it to be; if it is not as independently endowed in reference to the things about it as hydrogen to oxygen in the formation of water, then, of course, spiritual phenomena, as the mere shadows of physical ones, have little or nothing to add to them. They cannot help the argument by which we approach the Supreme Reason, the author of all things. Reason, as we know it, is controlled by things rather than the controller of things. More than this, since the reason of man is the product of physical facts, since the most complex relations and the most perfect order are in these facts prior to his action, and the additional order of which he is the medium, is but an extension of this antecedent order, we have no basis for the conclusion that intelligent, coherent relations are the peculiar product of mind.

We start, therefore, our proof in this field of reason with the declaration of reason as itself a peculiar and primitive power. The proofs of the assertion are psychological, and while they must be sought in psychology, they are there, as we believe, very abundant. In a very important sense, reason, the reason of man, is not natural but supernatural. In nature we include all elements and forces in themselves fixed, and combined under fixed laws; in the supernatural we include all powers modifiable within themselves, and so capable of modifying physical forces. The two fields are not different in being the one subject to law and the other not, but in the character of the laws that prevail in them, and in the character of the agencies that come under those laws. Law, unfortunately, has acquired in this connection a meaning which is interpreted by physical dependencies. Powers are spiritual, they are without fixed local centres of action, their action may be withheld or it may be put forth in one or other of various ways. Forces are physical, they have determinate centres and lines and methods of action. There is at any one time and place but one possible expression to them. The laws of mind involve reasons; in reference to thought we term these reasons premises, in reference to action, motives. The laws of matter involve causation, an absolute equality of causes and effects, the first as forces and the second as their expression.

A cause and a reason are not the same, and can not be confounded without the utmost confusion. Reasons can be insufficient and yet the conclusion

may be drawn, or the action put forth. Causes can never be inadequate to the effects which depend on them. If reasons and causes were identical, the distinction between truth and falsehood would disappear, it would be swallowed up in the division of real and unreal applicable to things and events. Whatever is in the physical world has a sufficient cause, whatever is not has not a sufficient cause. The only distinction pertinent here, therefore, is that of being and not being. The same, on the above supposition, would be true of mind. Every conclusion and every action would have a sufficient cause, and every conclusion not drawn and every action not done, would fail simply because there was no adequate ground. This distinction between the true and untrue is the distinction not only of all morality but of all thought, and its denial is, therefore, forbidden by the very first canon of reason, that no action shall be self-contradictory. This affirmation of the identity of causes and reasons is self-destructive, since it affirms one thing to be true, and in the very act denies the distinction on which the true and the untrue rest.

We affirm, therefore, a radical diversity between physical law and logical law, between causes and reasons, between forces and motives. It will be seen that this distinction, so fundamental in the facts of the world, involves the division, so sharply discussed, between the natural and the supernatural. While the controversy has been waged most warmly in connection with miracles and answers to prayer, these are, after all, secondary ques-

tions, and must share the fortunes of the more profound and primary inquiry, whether there are two types of action in the Universe. If there is but one type, and that the physical one, then miracles must of course give way. Nor would the fact, occurring in this form, demand a moment's anxiety, since previously our own personality must have succumbed in all its peculiar elements of power. It should also be observed that charges of materialism and defences against them, are made on secondary grounds. There are two positions involved in materialism, the affirmation that mental powers are a phase of physical properties, and that the laws which govern the two sets of phenomena are the same in characteristics. The charge is more usually brought and the defence set up under the first specification. But this specification has its chief significance in its relation to the second. Whatever, therefore, Spencer and others may affirm or deny about the inapproachable point of the very essence of mind and matter, is of little moment compared with the very practical and pressing affirmation of one causal law for the two contiguous fields. If mental laws can all be expounded in terms of matter and motion, not by a dexterously sustained figure, but in exact description, the controversy, in its most important bearings, is closed, and mind sinks hopelessly to the level of the forces which enclose it and flow through it. We start, then, our present proof with the distinct assertion that reason and purely rational action have their own laws, other than the laws of forces, and that,

in reference to these laws of nature, they are supernatural, being controlled by reason and not by causes.

§ 2. Under this principle, or assertion or assumption,—if any choose to call it so—whose proof is remitted to psychology, we start our line of thought, for this is the narrowest foundation on which the argument can be safely built. We draw attention first to the fact that there has been a protracted evolution of physical forces, by which they have been steadily built up in subtle organic structures, subject to the uses of spiritual powers. These structures, by a series of close connections extending over a great breadth of surface and deep into the frame-work of things, are closely united below with all physical forces, while above they yield in an inscrutable way to the impulses of life, and later to the indications of mind. The spiritual powers, most fully expressed in the mind of man, thus find their way, through the mediation of organic forces, among physical forces, and the two kingdoms are woven into each other so deftly that it is impossible to tell exactly how the one web ends and the other begins. Whatever speculative difficulty there may be in the union of the two sets of laws, they actually unite with each other with the utmost ease, and without the loss on the part of either of its distinctive characteristics. Reasons in the mind become causes in the body, and causes in the body, reasons in the mind. Physical forces, working through the comparatively perfect nervous system of man, on whose construction so many ages have been expend-

ed, mount very high, and yet come to a limit before they reach the very centres of thought or of rational action. On the other hand, spiritual powers descend in their influence far down among physical forces, but they do not take on in their passage the condition of the agents with which they are dealing. They insert in an inscrutable way their own inscrutable terms, and modify results with no suspension of causes. The intermediate ground in which the spiritual powers keep company with the physical forces is organic structure in its highest order. Beyond this structure causes have unrestrained action. The mind touches these facts by a distinct insertion of new causes. In the living organism itself mind has the power of giving new conditions, as if a rational looker-on could tilt the plain on which streams were flowing.

If we direct attention to the appearance, one by one, of the constituents of life, ultimately to be made the permeable medium of rational action, then consciousness, or the first fact in consciousness, is the lowest range of that rational movement, and marks the depth of its descent, though many organic processes far below consciousness are influenced by conscious activity. These, in turn, carry the wave of motion far and wide into the physical world. We wish to impress on the mind the long constructive work by which these two great kingdoms, the physical and spiritual, are made to skirt each other, and are woven into each other with perpetual interplay along their entire margin. We shall thus see the way in which the natural has been

built up, each more crass form giving place to one more mobile, till it has become the fitting foundation of the supernatural, the one borrowing its significance from the other, as the pedestal and the statue, or the light and the eye.

The external development of automatic action by nervous stimuli is the typical fact of the simply animal kingdom. The nervous system, from the most rudimentary form, is broadened, varied and compacted in service, till we have reached a vast variety of combinations wonderfully complicated, precise and harmonious in their structure. The palpable and obscure actions that go on in the human body, concurrent in the admirable result by virtue of correlated nervous stimuli, are quite beyond analysis.

It is the primary purpose of the nervous system to receive stimuli of a great variety of orders, and to convert them into muscular movement, diffused and harmonized under the passing and permanent exigencies of the living body. All other offices are grafted on this office. When these stimuli and these actions—accompanied as they are every instant by a retinue of chemical, thermal, capillary and more obscure physical forces—pertain to the interior economy of the body, they constitute organic life; when they pertain to surface-senses and interior impressions, calling out action toward the environment in its conditions of well-being, they constitute instinctive life. While the interior organic economy of the living animal is automatic under appropriate stimuli, so also is a large share of its movements in the adjustment of itself or of the group to which it

belongs, due to external circumstances. These two, organic action and instinctive action, inner and outer correlation under direct stimuli, cover most of the wonderful industries of the phalansteries of insects. That these forms of life are chiefly below the range of consciousness is apparent when we consider (1) the fixedness of the forms involved in them; (2) the comparatively independent yet fitly combined activity of the several members of the community; (3) the slight sympathy and recognition between individuals; (4) the direct association of the form of the activity with physical organs fitted to it, as the spinning of spiders with spinnerets, the burden of bees with their baskets, the cutting and sawing of ants with their mandibles, their cleansing and toilet with tarsal combs, their battles with the secretion of poison, their various labors with the supply of a glutinous fluid; (5) and the way in which the common life is dependent on diverse physical developments in those who constitute it, as of queen-bees, workers and drones, male and female ants, and major and minor workers. The community thus presents collectively a modified form of organic combination, almost as much so as a family of coral polyps.

An immense variety of self-sustained lives being reached by these automatic responses of a nervous system developed into many forms, there are present the needed conditions for consciousness as a distinct and additive element. When stimuli are accompanied by sensations, these, treasured by memory, are grouped in many instructive ways according to the experience of each species and each indi-

vidual. The uniformity of instinctive development is thus broken up, and many new relations taken in that are too changeable for so general a law. By this step of evolution the exceptional physical endowments of the animal are reduced, while the flexibility of its adaptation to variable conditions is increased. Higher animals, as the wolf and fox, have physical organs less exactly fitted to a specific service than are the wax-pockets of a bee, but by the continuous growth of experience in the individual and in successive generations, they have the grounds of a much more varied life.

On this basis of life, divided between stimuli and sensations and shaped into consistency under the two, is built rational life. The grand distinction is that the facts of consciousness are pervaded in rational life by rational vision. These intrinsic dependencies are seen, and they are united within and beyond the range of experience in their logical and their constructive relations. Vision follows light, and the possibilities of things are disclosed. This life, in turn, while it rests on all that goes before it, crowds it back, puts it in new relations, and takes to itself the initiative. Organic and instinctive and associative life are now the wheels revolving in dark places and remote rooms, by which the loom, at which sits the deft workman, is kept in motion. These are the forces to which he commits the execution in the web of each new pattern that rises to his fancy.

It will be seen at once that preparation has been made for the rational life of man from the very

beginning, that nothing hitherto done has been in vain in reference to its powers. Man's hold on the physical world reaches through, and is maintained through, all the organic forms that separate him from the first germs of life. Man is the epitome of them all. The permeability of nerve-tissue to varied stimuli, the combination of stimuli and sensations in harmonious living functions, have progressed together, and, in the latest stage, have offered all their acquired powers to reason in its new unfolding. Each form of life makes way for another and higher, each is serviceable to every other, and life, in all its complex powers and in all its complex forms, bears the burdens that reason puts upon it.

The length of time required by this evolution is seen if we consider (1) its relation to physical elements. Evolution in these elements involves the evolution in the life which was to spring up under them and move forward with them. The changeable environment carried with it the shifty life. (2) This length of time is embraced also in the coëtaneous evolution of vegetable and animal life, the one waiting on the other; and in the immense field covered by the two, succeeding plants and animals, always in a general and often in a very definite way, having been dependent on previous plants and animals for nourishment. The formation everywhere of fertile soil is itself largely the result of life, while the higher animals demand, directly or indirectly, in the conditions of their existence, most of what has gone before them. Man's uses in turn range through the world, and especially through its living things.

So deep is this his dependence that it is often not safe for him to exterminate life that he deems pernicious. (3) We find the time occupied in evolution not only congruous with the movement of the forces that take part in it, with the inter-dependence of its several portions, and with the vastness of the field swept over by it, but also with the intellectual structure of man. His thought follows this evolution in the past and takes part in it in the present by means of these measured steps of progress.

Let us intensify to our apprehension this evolution in its relation to him as the one rational being who is its crowning product. An excellent illustration of a supreme power in man, the complex product of stimuli and sensations wrought together automatically and voluntarily, is the vigor with which he maintains an upright position. This attitude, while it is a crowning physical expression of a spiritual preëminence, is mechanically a very weak one. Man, with marvelous poise, is able both in rest and in motion to make his position one of ease and strength. Sight, touch—as of the foot—muscular sensations, and still more obscure stimuli—quite likely due to the semicircular canals of the ear—concur in this result. The sailor easily and firmly walks the rocking deck, the only steadfast upright thing amid all its lines and planes.

The physical organism mediates in two ways between matter and mind; first, by carrying inward impressions made by matter, and, secondly, by bearing outward impulses due to mind. In both of these directions the endowments of man are of a

supreme order. The range of his senses, supplemented and supported as they are by mental powers, is very great. The ear of man has a discrimination of sounds extended, convenient and searching. Vibrations between the limits of sixteen and thirty-two thousand per second, are recognized by him. He does not suffer the interruption and annoyance of every vibration, nor lose those which are the primary material of knowledge. We are to remember also that any unusual intensity of a single sense would tend to exclude other senses; and a general intensity of sensations and perceptions would keep back intellectual development. How exact and penetrative is this search of the ear! Take rapid speech, broken in upon and overlapped by the speech of others, and the slightest articulation, intonation and modulation, are gathered up in the swift-flowing stream. The sounds yield at once both the thought and the emotion they contain. The complex experiences of one or more human lives come thronging in, a motley crowd, at this gate of the mind. The leader of an orchestra penetrates that great volume of sound—as changeable as mists shaken by winds—with a sense that searches out the last constructive element. The tone, the time, the proportion held by each instrument in its own rapid flow of notes and in its relation to every other instrument, are followed by a throbbing sensitiveness, cognizant of every felicity and infelicity of combination.

The eye of man, though not equal in particular forms of vision to the eyes of some animals, has, in

connection with the mind of man, an immeasurably broader range than any corresponding sense. The ease and rapidity with which it follows the printed page, the kindred facility with which it learns to interpret the obscure signs in nature of any science, its movement by the aid of the microscope through the world of minute things, and by the telescope through the universe of immense things, make it the entirely adequate inlet to the fullest data of the largest intellectual life. Men have never put measurement to this magnificent portal of knowledge and beauty.

Man is equally well endowed with the facile instruments of power. No matter what the ear and the eye let in, the voice and the hand can give it proportionate utterance. They add assertion to revelation, as the sky adds color to light, and the thoughts of man have much of the fullness and charm of expression which belong to the forces of nature as they awake with the day. The hand of man is the most variable and deft of instruments. All other tools are straitened and awkward in comparison with it. They all yield themselves to it, and simply expand its power. There is nothing which man proposes to do, in whose accomplishment the hand cannot adequately second him. Compare it with any instrument of merely animal life, and its superiority is as immeasurable as that of the mind of man. A great violinist is instinct, in every movement of the arms, in every touch of the fingers, with a musical inspiration, that pours itself out in perfect execution, in combinations and

contrasts, as variable, rapid and significant, and as inapproachable, as the subtlest interplay in light of natural forces.

In this relation of the physical structure of man to the organic structures of the world, we have (1) protracted and complete preparation by the lower for the higher. This slow accumulation of organic powers in specific lives, this diffusion of them in many forms, in many lives, have plainly before them this enlarged ulterior service for man, their chief possessor. We have also (2) a reshaping of the lower by the higher. Reason at once takes the initiative, enlarges and represses the powers beneath it for its own ends. Thus instinct rapidly disappears. We have further (3) a thorough use of the lower by the higher. The organic powers which have prepared the way for reason become subject to it. Reason lays hold of organic life and associative life as instruments in its work. It gains skill, but the combinations of skill and the labors of skill it passes over to the organic structure. It judges, but it treasures judgment in association. These are the pack-horses in its train, bearing the spoils as it moves on to new conquests.

(4) Under this law of development reason comes in as a new term, and the development itself is henceforth constructed more and more in reference to it. We speak of educating the senses; it is impossible to educate them without an accompanying education of the mind. The eye sees as the mind directs and interprets. The muscles discriminate in execution what the mind discriminates in con-

ception. Force, flexibility, grace, become henceforward products of physical powers as permeated by rational life. If this life grows narrow and feeble, the body decays with it. It has left behind it merely animal vigor, and must now win the higher circle of rational gifts.

§ 3. This last fact may be put in another form and under another light. The world is thoroughly fitted to the unfolding of man's intellectual powers. The mind of man has an almost unlimited range of space and time as furnishing the conditions and incentives of thought. The more narrow the life, the more restricted are its impulses in these respects. Instinct is added to organism to give it a freer movement in space and a broader prevision in time. Associative life is an advance on instinctive life in its contemplation of surrounding objects, while reason is ready for the consideration of the largest spaces and longest times. At each step from barbarism to civilization and from civilization to enlightenment, the breadth of interests and periods is amplified. Men work more and more, feeling that work has, in its relations, in its motives and issues, no bounds. When the finite reason recognizes the infinite reason, its thought gliding on with the great sum of all thought, this enlargement, continuous from the very dawn of life, passes to its zenith.

The inventions and discoveries of science lie in the same direction. As astronomy opens up the infinite reaches of space, so geology pushes back through the æons of time and fills with its record

the years of eternity beyond vision. Expansion in one direction is accompanied with corresponding expansion in the other, and omnipresence takes up both measurements. If the telescope bears the eye outward, the microscope bears it inward; and over against the universe of magnitudes is put that of molecules. The breadth of the plan is matched by its comprehensiveness. If we are constrained to worship, we are persuaded also to trust. If we are ready to be overwhelmed and lost among these innumerable and great things, divine love finds us in the care it extends to little things.

That the world is a school of literature, science and philosophy, the results sufficiently show. Simple problems make way for more difficult ones. And there is never a moment in which the paths of progress are not open, nor ever a moment in which the interest of pursuit slackens. Language is the chief instrument of intellectual development, and language gathers wealth with every rolling year. Things are grouped in nature under constructive forms. Concrete objects offer themselves to sensation. Then enters the analytic and synthetic reason. Qualities and relations are discriminated and grouped for the purposes of thought and of rational handling. Language, separating single properties, actions, relations, and uniting properties, actions, relations in classes according to inherent connections, constructs a world of thought which is the internal skeleton of the world of things. The two lie over against each other as the ocean and the chart by which it is navigated. The growth of language and

of mind in and by language, is as distinct an intellectual fact as the arrangement of specimens in a museum by genera, orders and classes. Man can hardly live without speech, and no man speaks without discrimination, and no speech can grow up into a tongue without being a great intellectual world by itself, the reflection of the one world in us and about us.

To this constant constructive activity of mind under thought-relations, is added a constantly deepening insight into the force and relation of those physical phenomena which lie as a language between the mind of man and the Infinite Mind. The subtlety and universality of this insight are seen in the perpetual personification which goes on in the mind of man, even in those minds which regard it as a false anthropopathic tendency. Law in its prevalence is not merely set down as a fact as broad as our experience,—which is, in truth, a very narrow experience—it becomes a great principle, a conviction that casts its immeasurable shadow over all the unexplored spaces of the universe, and plants a throne therein like a demiurge. We give it the force and extension of our own thought, and readily believe that it has a like vigor in the world about us. Ninety-nine parts in this mental creation transcend experience. We speak of the reign of law, and it does not express the scope of our senses but the range of our thoughts. Thus also we personify truth. We are struck with its unity; it seems to us to have the mastery of the world. This is simply mind recognizing the standards of mind, and dis-

covering that mind has been everywhere before it; that things are constructed together in a universe, whose fundamental relations are relatively few, and whose facts lie together in the field of knowledge. In the same spirit we personify nature as the invisible, pervasive personality, whose presence we feel, by whose constructive forces we are surrounded. If we resent this intrusion of the personal, if we refuse to carry it forward to its theistic fullness, nevertheless it returns to us after a little as "The Unknown," as "The-not-ourselves-that-makes-for-righteousness." The unities of thought and of purpose in the world are too strong for us; they push back upon us some recognition of their existence, and cast upon us some shadow of a personal presence. No matter how far, with the simple clues of science, we may have pushed our solitary way into the silence and darkness, we do not escape the fascination of personality, and just at the end we face about with a personification on our lips, a faint return of hope and life to our thoughts, the flash of a departing day. An absolute blank in rational life the mind will not confront; the instinct of self-preservation is too deeply planted. If we miss the true presence, we people the world with sprites and spirits; or, failing of these, with the shadows of our cold personification, testifying all the while to ourselves of the discovery we have made of pure spiritual elements.

Herein is undeniably the obscure germ of a new development, as truly as was consciousness when it arose faintly among stimuli, its sensations hardly

able to touch the life below them. In the perception of truth and beauty and right, man reaches profounder relations of things and actions than belong to them in their sensible properties, and out of these new terms there arises a new development. The terminologies of science and religion are yet a long way apart, but this fact of a new and larger life is tersely covered by the words of Christ, "Ye must be born again."

§ 4. The first stage in this spiritual development is social—we say the first stage, though the several stages accompany each other. Social growth has three impulses, which succeed each other, without, however, the absolute loss of any. The seed has first its nourishment in itself, and later takes it from the earth beneath it and the air above it. The simplest impulses in society are appetites and affections of a narrow but decided range. These are supported on their own plane by the necessity of safety, and together they result in tribes. With intellectual development comes national life, giving the conditions needed for the play of the desires, which constitute the second class of incentives. The range of activities and sentiments incident to the desires of wealth and power and position, is much greater than that of the appetites, though its centre in personal well-being remains the same. This development opens up all the phases of civilization. It separates families more distinctly below, and combines races above into great nations, offering scope to large and varied ambitions. Both results are in the self-seeking impulses. The personal element

draws to itself its immediate dependencies in the family, while the compacting of national life broadens for all the field of the desires. This is the era of state-craft and of economies, whose laws are those of self-interest. Government is first a question of national power, whose advantages accrue primarily to those who control the nation ; and later, as vision grows more clear and influence broadens among men, it becomes a question also of protection within the nation, of the defence of citizen against citizen, and of citizens against rulers. In either case, the laws involved are those of self-interest.

This is equally true of the principles of Political Economy. Whether protection or free-trade, capital, labor or currency, is discussed, the facts sought into are those which uncover the pecuniary interests of the parties involved in them The law which most broadly reconciles these interests is the one enforced. All questions are intellectual questions, and though the discussion will not often, with Machiavelian indifference, set aside moral relations, neither will it rest its conclusions upon them. Morals may receive their own independent enforcement, the amenities of a social life will be allowed to hover about the person as a part of his freedom, an appropriation of his personality, but the laws laid down, as offering to society its combining conditions, will still be those of self-interest.

There are in this social evolution some points to be distinctly observed. (1) Imperfect and partial combinations take place on an appetitive basis. These give conditions for the ultimate unfolding of

intellectual impulses of a broader range. (2) The desires, the product of an enlarged horizon, take up this work of social combination, and give it great extension. The range of powers and feelings in the individual is enlarged to the measure of this social world to which he belongs. (3) These impulses, in turn, reach a point beyond which they cannot go, and from which they must give place to spiritually constructive powers if the development is to proceed.

The spiritual law of a true spiritual life was long since laid down. The law commends itself to the thoughts of men, but has not established itself as a living, controlling sentiment. There is always much hesitancy in passing from one group of impulses to another, as from those which govern barbarous life to those which govern civilized life. Such changes involve not simply individual convictions but a reconstruction of communities and nations. This law of society by which alone it can take on new force and forms, is the second commandment, "Thou shalt love thy neighbor as thyself." Under this law conflict ceases, the life of each is enlarged by the life of all, powers and possessions are no longer selfishly appropriated. Society becomes one in its blessings and enjoyments, and that by the clear light and inner freedom of its own convictions. The impulses of life cease to set inward under self-interest, but turn outward toward the general interest, toward the thing highest and best. The mind thus escapes the bickerings of conflict, the narrowing, backward flow on its own interests of its largest

efforts, the increasing inner limitations of its too personal life, and puts in their place aspirations as broad and peaceful as its own best vision. Some may deny that there is in the human heart the spring to any such unfolding; they will hardly deny that this unfolding is a great ideal in which the spiritual life, losing no true inner hold on itself,—we are to love our neighbor *as* we love ourselves—expands to the full compass of rational life, taken in its broadest relations, deepest insights, and amplest promise.

That simply intellectual development under self-interest can not push society indefinitely forward, is sufficiently plain. (1) The conflict between person and person, class and class, is not removed by it. There is, indeed, such a fundamental harmony in things, that the highest interests of all persons are reconcilable one with another; there are just below the soil the foundations of a perfect moral structure; (a) but this reconciliation must include not exclude the moral affections. If the hearts of men remain passionate and selfish, the reconciliation fails, because the perverse desires reject the happiness offered them, and insist on other terms. (b) Moreover, the ultimate harmony of interests cannot be fully seen, nor its laws accepted by men while they are pushing hastily and blindly on toward their own pleasures. The foundations spoken of are to be unearthed by the moral judgment, and disclosed in the light of the moral affections. (c) If the harmonic law were hit upon and followed, it would produce only very partial and formal order, as its true, informing spirit of love would be wanting. A

form pushed beyond the impulse which sustains it, immediately takes on new phases of evil.

(2) This constructive law of love is not, from the nature of the case, fully applicable till the community to which it pertains accepts it and obeys it in each of its members. In other words, the only full preparation for the law is a complete personal, spiritual development, under the law, of all those subject to it. The law, like all laws which express the forms of life, must control perfectly the material subject to it, and build all up together. A spiritual development to be complete anywhere must be complete everywhere, must be a penetrative, pervasive, social power. The criminal, the law-abiding but self-seeking citizen, cannot be working constituents in this spiritual life. They cannot fail to burden and reduce it by the full force of their own personality. Love that is full, free, pure, peaceful, rational, demands as much in its object as in its subject. It is action and reaction between persons who comprehend truth, and each other in the truth. It is action between magnet and magnet. Petulance, pride, stolidity, doggedness, bring instant limitations to spiritual affections, as truly as to men's thoughts; narrow down both the possibilities of loving and of being loved. That a perfect law should prevail among feeble and mutilated things, is an impossibility. Love is not an irrational impulse, to be expended in the same way toward all persons. It sinks into rebuke and repugnance, when men are dropping below the spiritual level. Not only will the virtues of all men contract somewhat of the

taint of the vices of their fellow men, as good wine cannot be kept in an unclean bottle, but these vices will not allow the free flow of love, as neither worthy of it nor suitably affected by it. Love under such conditions instantly takes on the reservation of reason, and ceases to be the supreme, regnant force.

The law, therefore, of love must save the whole community or it saves no man perfectly in the community. The spiritual life, like the life of the body, or the life of the household, is too delicate a thing not to suffer loss and derangement from the derangement of any one of its members. If, therefore, the laws of self-interest are left to work as selfishness in the hearts of men, there can be no complete combining power or continuous progress. Growth will be sporadic, with great chasms between man and man, class and class.

(3) Such, in fact, has been the history of civilization. It has not healed the divisions between men; it has deepened them rather. It has not stood firm within itself and so without itself. Its bonds have weakened as the first impulses have been expended, and so it has succumbed to decay and accident. We must, therefore, clearly see, that only a new increment, a new law, has in it the promise of a new life. That law is the law of our spiritual life.

§ 5. The fundamental unfolding of our spiritual nature is under its own moral law. It has two forms, one of claims and one of gifts; one arising from the pressure of other personalities upon it, and one from its own spontaneous overflow; one of justice and one of benevolence. Justice covers

that which we cannot withhold without trespassing on the rights of men, benevolence that which we cannot withhold without narrowing down the inner force and spirit of our own lives. Justice is an external defence of spiritual life, benevolence is that life itself. The one field is covered by the enforced claims of men, the other is restored to personal freedom. Both proceed on the basis of a moral law which gives its possessor an integral life within himself. Justice accepts rights as ultimate and as equal in their purely personal force, and so defines and protects them. Man is thus guarded against violence, the defences of life are set up for him, and that without reference to his own strength. A personal law, which gives independent personal rights, is thereby recognized. Justice proceeds on the ground that no one person can be allowed to put limits on other persons endowed with a like law, other than those which they share in common from common wants. Men are equal before the law, which is the expression of justice, because they have the same ultimate rights under one moral law.

Benevolence goes farther. It does not contemplate man in his laws of combination, but in his individual development. Here again is recognized a unity of powers and an equality of values. The variable social values and shifting forms of human lives are not denied ; nor the disagreeable pressure, therefore, which society puts upon its members. But these are all referred to circumstances, the interior oneness of rational life being held fast, and

the equality of freedom and privileges being made to rest on its purely personal element. The least development which a moral being can make, shares not merely the same defences with the greatest, it shares also the interest bestowed on the greatest as of the same nature with it. Manhood is not estimated as subject to its accidents, but its accidents as subject to it. Its position is not adjusted to its variable elements, but to its fixed relations. Benevolence, which is the good-will involved in the second command, takes a universal view. It recognizes the fact that spiritual well-being does not gain its worth from the circumstance that it is my well-being, or the well-being of any one; but that it carries with it everywhere, like gold; its full value. Benevolence, therefore, finds no limits in personal bounds, but travels freely in all directions in search of ultimate good.

Moral development lies in the free unfolding, first of justice, then of benevolence; twin impulses under that moral law which gives to man rights and true worth. Men, while still engaged in the intellectual search after interests which involve a proximate freedom in social life, stumble on justice, but justice will not complete itself, or pass up into benevolence, except as the moral nature, the seat of both laws, is unfolded.

Moral development proceeds from the individual to the family, from the family to the community, from the community to the nation, from the laws within the nation to those between nations. In this last relation we are just ceasing from simple

brute force, while in a few favored households the law of love prevails. The reason of this law of growth is double. (1) The moral law has its seat in the individual, and thence passes into public sentiment—a movement the reverse of that ascribed to it under utilitarianism. (2) The moral law as a social law cannot find full application save as each person under it freely accepts it, and gives opportunity for a perfect joint life. This is first secured in the narrower circle.

The physical and the intellectual unfolding of the race are favored by natural selection. Cunning, combination, counsel, become elements in progress, quite as much so as physical strength, and have been favored in the general struggle. Natural selection, the simple prevalence of power in the naked struggle for life, can hardly go farther than those forces which make for self-interest; nor does it, as a matter of fact, seem to go farther. Natural selection has wrought against pure moral power as a thing of scruples, restraints and burdens. Moral purity provokes hostility and has no defensive armor against it. In the midst of selfish and unscrupulous counsels, moral integrity has great power of irritation and little power of resistance. Socrates stands as its type; where it prevails, it prevails on its own basis as moral power, and, in the meanwhile, the passionate combatants for mere life trample it under foot. This is well, since pure benevolence, calling self-interest to its aid, would shortly be hopelessly corrupted by it. Human life must at this transition be lifted off the old gauge

and grade and be planted on the new ones. The moral impulses must take the place of the physical and intellectual ones. Just now the roots of desire are a little loosened, and yet we have not learned to replace them by the affections which spring from good-will. Hence many are asking whether life is worth having, and some are pessimists. Having pushed human life forward along the narrow lines of rank, wealth and culture, and finding it now as hitherto tossed and tormented in a chopping sea of selfish impulses, with no spiritual breadth of horizon or peacefulness, we ask in vexation whether it is worth possessing, our very question indicating the waste we have made of it. Our method has shut in our lives and smothered them down till they are able, like a feeble, flickering light, only to make tangible and painful the surrounding darkness.

An intellectual development drawing near its end gives abundant material for pessimism. Neither the animal appetites, nor their enlargement into the intellectual desires with their incident activities, offer any ultimate good. The appetites, the physical sensibilities, remain the seat of action, and though action receives a very sudden enlargement in the impulses of civilized life, mere action must always wear out, yielding no rest. It is peaceful revolution around a permanent centre that alone bestows happiness. Physical sensibilities may greatly help a rational life otherwise full, but the instant they are looked to for support, they disclose a double weakness. (1) They create an appetite

that remains a permanent craving with no sufficient compensation for this discomfort in the brief periods of gratification. All indulgence has in it his ineradicable vice of irritation. (2) Physical powers tend to slow decay, and so fasten on our hopes the faintness of a sinking motion.

The desires which arise from an intellectual expansion of the animal life, as those of wealth, power, position, give at once a great increase of enjoyment by the flood of feeling called out in their pursuit. As the boyish life breaks out in sports, the manly life overflows in effort. This sudden uplift of the powers in variety and in force for a time satisfies the spirit. In the exhilaration of spring we sow gladly and do not question closely the harvest. We take it at its promised value. But the harvest must at length come, and if that turns to straw, quite another light falls on the labors of the spring-time. If the mind, having run its circle of effort, is thrown back on itself with no increase of spiritual wealth, with none of the contentment of real acquisition and still further hope, then the longer the route it has been led the greater the unfulfilled promises and the deeper the sense of failure. A life of desires, though a longer life and one more decorous than one of appetites, though it closes the day with more dignity and less self-reproach, equally misses the blessings it promises itself. It is far poorer in the end than at the beginning. At the close of successive disappointments it can only exclaim:

"And yet, what will you have?
Can man be made content?"

The desires are very earnest, almost passionate; they more or less exclude each other; they push exertion beyond the point of pleasure, carrying it over into hard labor; and yet they return in the end with no true power, no real possession, no contentment. Hence pessimism characterizes the close of this development. The more circling and lofty the flight, it is said, the greater the plunge. All lifting up is for this overthrow. We may readily grant the assertion, for our lives are not to be floated on the swollen waters of desires, themselves to be swallowed up in arid deserts. From an experience thus returning on itself empty-handed, having suffered infinite labor and jostle, there spring those hypochondriacal moments in which "the world, viewed from the æsthetic side, appears a cabinet of caricatures; from the intellectual side, a mad-house; and from the moral side, a harboring place for rascals. * * * The few wide, profound and real observers of human life have all known, and known often, this fantastic consciousness of living in a strange, distorted universe of lunatics, knaves, grotesques." * The wisdom of Rabelais' moral is the true wisdom both for one's own repose and that of other people: "To do one's duty so so, always to speak well of the prior, and to let the world go as it lists."† This is the simple subsidence of the spiritual life to the level of the desires, with the added recognition of the impossibility of any real good on that plane. To this is sometimes joined a moral vision not yet extinguished, and sim-

* Diderot, p. 228,

† Ibid., p. 431.

ply burdening the soul with the dismal and false conviction "that there is in every man and woman something, which, if you knew it, would make you hate them."*

The remedy must be as deep as the disease. A new centre must be taken. Impulse must go forth toward all spiritual life, with pure affection, under one law. Not till love—love met and measured everywhere by love—returns upon itself baffled and empty, is the life that God has given us to be pronounced a failure. An attainable blessedness is sufficient for the brave and faithful spirit.

What are the bearings of these social facts upon the proof of the being of God? Simply this. Every stage of development has been so ordered that it leads to and must be supplemented by a true spiritual development. Failing of this, the whole movement becomes increasingly futile. This then is the cardinal fact of the world, and one which discloses its original bent, its source in righteousness, and its ministration to righteousness. As the law of love comes to be the uppermost law in life, life advances to its own good, and begins to take in harmoniously and successfully the grace and the wealth of the secondary spiritual laws of beauty and truth. It is thus crowded full, like a vine well-laden with fragrant clusters, with the fruits both of physical and intellectual culture.

§ 6. An unfolding that must keep pace with this moral unfolding, and in its highest forms be the very fountain of its strength, is religious development. We shall never actually reach spiritual fulness under

* Ibid., p. 232.

the second commandment, till we have reached it under the first commandment.

The thoughtful mind is probably as distressed and harassed by the religious history of mankind as by any one chapter in human experience. Why these pitiful, these grovelling and cruel superstitions; this ignorance and this depravity under the baptismal hand of religion! If light and the very source of light are here, why this palpable darkness!

(1) We forget that a system of growth must be consistent throughout; that we cannot have growth here and gift there; that the intellect cannot remain subject to all the stages of cultivation, while there are great and sudden upliftings in the spiritual nature. All growth, like that of the seed, starts below the soil in darkness and decay. What men are always pushing for in their thoughts are gifts, not graces—graces which are the skilful wielding of one's own powers.

It is not the Word of God that the world has wanted, nor the authoritative utterance of it from time to time, like the booming stroke of a great bell. The true form and the true force of the idea are what have been needed, and these are the things that have been and are being slowly acquired. Utter the Word where you please, and with what emphasis you please, the ears on which it falls decide its significance. Take Italy in the fifteenth century. The most shameless vices were seated under the shadow of the altar and ministered at the altar. The form and the force of the divine image are in the mind itself, and can only come forth with a pro-

portional spiritual development. Not all material in all shapes can make a mirror. We see something of the divine form and force in the face of Christ, for here was a life that held a mirror to heaven. For this reason it is that religions so uniformly degenerate,—Parseeism, the theism of Israel, Buddhism, the mythology of the Greeks, and Christianity in a dozen different lines of descent. Religions owe their first force to highly endowed spiritual natures. Passing thence to the ordinary mind, they suffer continuous reduction and perversion, till, divested of power, they are overtaken by unbelief.

There is much feeble philosophy expended in exposing the anthropomorphic tendency of the human mind, as if there could or should be in it any other method. We can only escape from our shadows by running into the darkness. The inner light of each mind is the only light, and Christ is the light of the world only because he more than another kindles this light. Spiritual development under simply outside revelation is impossible, as nineteen Christian centuries have sufficiently shown.

(2) All the crudities and even cruelties of flickering faiths are admissable, if not acceptable, as means of progress. Men seem to think that there is peculiar significance in every religious failure, as if it were in some way a failure of religion, and not of men in the pursuit of religion. Religion, like knowledge, must have its phases of strength and weakness. If we can tolerate all the bad judgments men have made from the very beginning, all the poor philosophy and false science that have been offered

us, for the sake of the real knowledge, instructive philosophy and sound science we now have, we may also bear the superstitions of the world for the sake of the spiritual life they have kept alive, till it now promises a new era. The lamp may have burned very low, but it has not gone out. Civil liberty has arisen slowly, has given rise to anarchy, has wielded the sword like a maniac: is therefore liberty of less worth, or worth less than the price paid? Is not the greatness of the price due to the extended derangement of men's minds, which are to be re-arranged? If diseases are sharp and chronic, the search after health is a slow and painful one; if the spaces of development are long, the road must be weary.

(3) Men have also been perplexed by the way in which in religion the more vague and remote relations have overshadowed and enfeebled the more immediate and tangible ones; by the way in which ill-grounded dogmas have set aside well-grounded moralities. This opposition between the religious and moral elements at any one time and place has been more apparent than real. The bad spiritual tendency has shown itself, now here, now there, and the form is the accident of the times. Morality may seem to suffer, and may actually suffer, from religious tenets, but on the other hand, these tenets have been shaped under the prevalent moral temper. Both are subject to the deep-seated tendencies which express the particular stage of development. If a barbarous community is converted to Christianity, the faith will be exposed to a practical and theoretical degeneracy in the di-

rection of previous habits. If immoralities grow out of these perversions, the perversions themselves were the product of immoralities. The history of Christianity presents this fact in every variety of form. Religious beliefs are toned down to the prevalent morality by a neglect of some truths, and by a strain put upon others. Mohammedanism has not greatly altered social and moral customs. Italy has been filled, under a Christian faith, with vice, fanaticism and piety, all fed from one source according to the emphasis and proportion given to theological beliefs. Such a doctrine as penance may favor vice or fanaticism or even true repentance, according to the moral temper of the person who employs it. In like manner the spiritual supremacy of a priesthood will be put to very diverse service, and in remarkably contrasted relations, according to the personal spiritual light that falls upon it. A door of escape is to one man a persuasive to sin, to another a persuasive from it. To ascribe the degeneracy of a period or of a country to its religious doctrines, is to refer associate effects to each other, when both, in their relations, are to be traced to more ultimate causes. Religion is not that independent and supreme power which its connection with revelation has led us to think it to be. It is partial and progressive, and may in its best forms succumb to corruption. It is a primary agent among other agents, with which it is in constant interaction. If these are unfortunate, religion will ultimately show the misfortune, and will in time extend it. The one cardinal fact is spiritual

development in the minds and hearts of men; and in this development religion is only the agent, it may be the supreme agent, or it may be a secondary one. That religion and morality can only move forward successfully together is plain, and equally plain, that the ruling impulse should spring from religion. Religion calls for the constant correction and interpretation, in its duties, of morality. Morality is the field in which its incentives properly expend themselves, in which they temper themselves with the wisdom of experience. Humanity is the field in which what would otherwise be the self-consuming heat of fanaticism is diffused, and cooled down into the warmth of life, into beneficent benevolence. On the other hand, morality, in its rapid evaporation of sentiment, calls constantly for the renewed inspiration of religion. If there are no inclusive relations which unite all men,—no common love, no kindred hopes,—the mere unity of a moral constitution will not carry with it sufficient organizing power. Nor shall we find virtue enough in men to kindle the virtuous love of man. The material is inflammable, but fire cannot be started by its own heat. The first command is, in its fulfillment, the inseparable antecedent of the second command. The heart being awakened and filled by divine love, is made wealthy in love which it can lavish on men. The second command will be obeyed only as the first command gives sufficiently bracing moral conditions. We do not make these affirmations as exhausting all the facts, but as a general law of the facts.

The true relation of morality and religion, as contrasted with each other, is that of the facts from which they respectively spring, under one spiritual constitution. Morality in this contrast defines the limits and the laws of action between man and man; religion, between man and God. As religion rests on the more comprehensive and momentous facts, so its impulses are proportionably fundamental; but as morality touches more nearly the daily life, as religion resolves itself into duties at this very point, morality must be the body of which religion is the spirit. If we come to regard religion as a sort of disembodied presence, to which all things are possible, the weakness of our moral temper is already apparent, and is sure to issue in a fanaticism of faith, and later a decay of faith, incident to the feebleness of the spiritual life. The vigor of spiritual life, as of all life, is found in the even balance of functions, of inner impulses and outer activities.

§ 7. Religion arises from our belief in the supernatural, and this supernatural finds its seat in God. The facts which we entertain as facts under this notion, and chief among which is the government of God, give rise to all the peculiar sentiments of religion. While it is not, perhaps, quite impossible, it is very difficult, logically to elevate natural theism into a religious faith; emotionally, and therefore practically, it cannot be done. By natural theism we understand a recognition of the absolute universality of physical, causal laws in

the world, and the direct reference of these laws to God as the sole expression of His being and government. Law is the dial-plate of the Universe; the mechanism back of it is the Divine Presence. Such a position is intellectually and spiritually one of unstable equilibrium. It has rarely been held, even by single minds, consistently, and has never reached the power and dignity of a religion. Religions have always had, and always will have, supernatural elements, that is, elements that cannot be covered by any merely physical laws, or laws analogous to them. The author of "Supernatural Religion" well understood this connection in his patient and laborious effort to undermine the supernatural. "There has scarcely been any system of religion in the world proclaimed otherwise than as a direct divine command."*

The impossibility of consistent natural theism is plain for many reasons. (1) The view involved in it of physical law will instantly shape psychology to itself. If natural laws are absolutely inflexible to even the Divine Mind, mind can only be harmonized with nature by being included under the same laws. But this step being taken, we have no longer any premises from which to reason to the existence of God. We must, therefore, give the human mind more scope than we give the Divine Mind, or the grounds on which we affirm the supremacy of mind and the ultimate reference of all things to it are lost. (2) Moreover, the Divine Being, simply put back of this natural order,—a superfluous term under the cosmogony of science,—

* Vol. i, p. 2.

loses all personal power and presence. No ray of light comes from Him which is not sifted through physical mediums. That presence is thus practically lost from the Universe. It is a creation of thought purely for purposes of thought, and yields nothing to the affections. The thoughts, therefore, will use it as material wholly plastic, and they will find little occasion to retain it when they have recognized the full sweep of the principles, physical and psychological, on which their cosmogony reposes. (3) The God of natural theism is not one to be prayed to, or worshipped, or even obeyed, in any direct way; and a shrine, therefore, will hardly be set up, or if set up, will be without doctrine, rite, priesthood, or fellowship. Such a system, radiating all personal power, must as certainly perish as the body of man, losing heat in infinite space.

The supernatural, then, which is the region of mind; which touches the true quality of thought, as springing up free of causes under the force of reasons; which includes personality, as potential and responsible within itself; the supernatural, which takes the key of the Universe from the bosom of man, is the very root of religion. The laws of mind not those of matter, reasons not causes, intelligences not forces, are ultimate with it. Out of reason flows its cosmogony, and the fountain of this reason is the bosom of God. Personality admits worship, petition, love, rites, doctrines, fellowship; the impersonal calls for none of them. But the personal is the supernatural, and the supernatural,

in the comprehensive meaning of the word, becomes the very essence of religion. The ways in which it shall manifest itself is quite a secondary consideration.

Miracles, as the most exposed and detached point in the supernatural, as burdened with the largest fungus growth of superstition, and the occasion of the most frequent and pernicious errors, have suffered the chief attack of materialism.

Miracles, as mere facts, are the most of them of very little moment. Ninety-nine in each hundred could be swept away with no loss to faith, but with great gain rather. It is because of the affinity of a small remainder of miracles with the religious spirit and method, that they call for defence. Prayer, worship, obedience under personal incentives, are of the essence of religion, and these all involve, in one form or another, the same elements as the miracle. The miracle offers philosophically no additional difficulty. Prayer can gain no true hearing, personal impulses can find no sincere expression and no range of control from man toward God and God toward man, without embracing at every step the efficacy of spiritual powers among physical forces. The personal in man and God alike rests on the supernatural. The miracle thus becomes, by its logical and emotional affinities, a strategical point in the controversy, settling the principles which are to rule in it. If the miracle is really and wholly irrational, many other things are so also.

The adjustment of the natural and the supernatural in their true balance with each other is

fundamental in philosophy and religion, and so in cosmogony. The world ceases to be intellectual and moral in its discipline if either is lost. Without the supernatural, the power to inquire into and guide natural forces, the world is no arena either for rational thought or action. Both are taken up among effects, are a part of the unchangeable interlock, their apparent significance being only a false light hung out to the reason. Truth is lost, because it is a distinction which belongs to thoughts and not to causes; right is lost, for it pertains to actions as capable of modification, and not to events as inevitable. On the other hand, if the natural is set aside or constantly broken down, the balance of reason is again missed, though on the opposite side. There is no need of reasons, for there is no fixed method of action, nothing which can be known and relied on, nothing which can be done in one way and which must fail in another way. If all things are changeable, the processes of reason are nugatory; if all things are fixed, the powers of reason are lost. If change is capricious, the supernatural loses its intellectual significance, and action becomes the bastard offspring of superstitious fears and hopes; if change is impossible, the mind sinks into the decay and lethargy of fatalism. The natural is the expression of a supernatural that is wholly rational, and the supernatural is the scope of thought beyond language, is reason overtopping its own work.

Superstition, the undue extension of the supernatural, has been the error of the past; scepticism, the undue limitation of the supernatural, its

loss in the natural, is the error of the present. Both lead, from opposite ideas, to the same issue; both are partial paralysis from different causes. It is necessary that we magnify the natural, the past product of reason, and reimpress it on the mind; it is also necessary that we recognize clearly the supernatural, the present product of reason, the living bud of thought, and assign it its true position. Human life is but the interplay of the two poles, and no sooner is one lost than the other is lost with it for all purposes of power.

We defend the supernatural as involving the very gist of faith, as finding its supreme expression in theism; and incidental to this defence is the defence of miracles as coming within the scope of reason, and so of the Supreme Reason.

The strong arguments against miracles are purely mental presumptions, and the discussion is thus one of philosophies, of *a priori* opinions. If this is clearly seen, the question will be put on its true grounds. The conflict, we affirm, is one of adverse presumptions, resting on different views of matter and mind. No fact of science is involved in it. The more intelligent opponents of miracles, granting this *a priori* character of the proof, would accept the assertion that no historical evidence, such as can now be accumulated for an event years or centuries behind us, would suffice to establish a miracle, and that the historical proof of many miracles, were it not for the nature of the miracle, should be accepted. Indeed, much of this controversy has been waged on the still narrower ground that no

proof whatever can overcome the presumption against a miracle.

The root of this growing presumption is logically, and has been historically, a philosophical one. It has arisen from the displacement of reasons by causes in the Empirical Philosophy. This philosophy has refused to accept at its true value one of the elements in the make-up of the world, and by so doing has (1) crippled its conclusions, and (2) given even its own conclusions an insufficient basis. Causes are invariable; they give no place for miracles. If, then, reasons are resolvable into causes, and so causes cover the world, causes allow no place for miracles, and no sufficient proof can be offered for them, as they are of the nature of a fundamental discord. They are borne down by the entire constructive force of the Universe.

Science, amplifying this idea of the universality of physical law, its own investigations lying in this field, adds its weight to the presumption against the supernatural. Intuitive Philosophy, disparaged in the meantime as effete in method and worthless in conclusions, has no compensatory influence. Even reason surreptitiously and narrowly rises up to say that the order and beauty of the world are dependent on law—law being always supposed to involve causes,—and that it is therefore against both order and beauty that these laws should suffer either arrest or modification. This assertion of reason betraying itself is made surreptitiously,—under the philosophy which it volunteers to support,—because reasons have been set aside in favor of causes; it is

made narrowly, because it takes into consideration only the physical half of the problem.

That these convictions are only presumptions resting on a philosophy and a science too narrow for the Universe they attempt to expound, and that they are faced by other presumptions of more breadth and solidity, are cardinal preliminary facts to be established in this controversy. These being established, the way is prepared at once for a fair discussion of the critical and historical evidence on which any miracles are offered. They can no longer be waved aside as already ruled out of the court of reason.

(1.) A philosophy that banishes reasons, banishes all grounds of presumption one way or the other; the Empirical Philosophy is not entitled to any presumptions: a philosophy that recognizes reasons, must recognize all the reasons that bear upon the case, whether they spring from the physical or spiritual bearings of the problem; the Empirical Philosophy frames a one sided presumption. Reasons are either the premises of an argument or the motives of an action; causes as causes are neither the one nor the other, but the sources of effects. There are no causes which as causes create presumptions against miracles. If causes as causes occasion the present feeling against them, causes as causes also occasion the existing feeling for them. Causes are in conflict with themselves, and we can only sit by and see the issue. Plainly no philosophy can use causes both as causes and reasons, cannot ground a presumption on the nature of causes, and then enforce it with the force of reasons.

(2.) Causes cannot yield reasons except by virtue of a philosophy that recognizes reasons, giving them their true position. The causes in the world, it is said, are sufficient for certain effects only, have always manifested themselves in these effects, and these prepare the way, in rational expectation, for no other effects. Law has been, is and must be universal. This line of argument is, through the intervention of the mind, the conversion of causes into reasons, and is good if the conversion is sound and broad, otherwise not good. The force of the facts involved in the premises is not the force of the argument. This is something very distinct and very much weaker. The premises are universal law, universal causation up to the moment in which any given miracle is offered; the conclusion is universal causation then as hitherto. Now, both the premises and the conclusion owe their vigor to a mental conviction, not to a knowledge of facts, and have, therefore, no more weight than properly belongs to the mental process. Men do not empirically know that causation is fixed and law universal. So far are they from this knowledge, that it is an inference extended from one case—itself most likely only partially known—in a million to the entire million. It is thus an induction of immense scope, if we compare what is directly known with the ground covered by the conclusion. Only an exceedingly small part of human experience is exact enough to constitute a fact in this induction, while from the merest fraction of the entire amount, the argument goes sweeping on, not simply to the limits

of experience, but to the limits of the world. This extension of the conclusion is no physical fact, it is simply an action of mind, entitled to whatever weight belongs to it as an argument, and no more. When the miracle, then, comes up for discussion, both the adverse premises and the adverse conclusions are presumptions of mind. We do not know that law has been universal, and if we did, it would still be an inference of disputable force, that it will remain so ; the facts do not go beyond the facts. It is only a mental conviction that the future shall be like the past. Argument, reasons are let in by this extension, and must be granted at once their full sweep. Facts, causes give no presumptions save to mind for the free, rational uses of mind.

The Empirical Philosophy that offers this insuperable objection to miracles and the proof of miracles, while it throws away the larger share of reasons in behalf of causes, is not entitled even to causes. A more surprising medley of fundamental contradictions has been rarely gotten together than that involved in the scepticism of this philosophy. Its logical outcome is nihilism as the only legitimate result of its self-destructive movement, but nihilism is so suicidal as to make it impossible to assert its conclusions without at the same time denying them. To say that we know nothing, is to wipe off the board the only words we have written upon it, and to leave it free for a new start : nihilism is no philosophy.

When we use this so-called philosophy to raise a presumption against the supernatural facts in

mind and in the history of mind, the confusion and contradiction of our premises and conclusions are complete. Causes are supersensual, and must be referred for their very existence to a conviction of mind. But if we set aside causes, and substitute sequences for them, we have neither causes nor reasons; and can construct no argument touching the physical world; nor, indeed, any world unless we restore the connections of mind. If there are no causes, then the mere sequence of events in the past is no cause operating on the mind to induce the expectation of a kindred sequence in future. If our thoughts have first fallen apart, having no rational link among themselves, and if things have now followed in the same direction, having no causes to bind them, the whole Universe is reduced to a dust heap of disintegrated particles, and nothing in any direction can follow from any other thing in any direction.

We return, then, to our assertion that the conviction against miracles is a mere presumption, having no more proof than the philosophy on which it rests, a philosophy of the most fragmentary and contradictory character. We are, therefore, not simply at liberty to give causes and reasons—reasons as the ground of causes, and causes as the expression of reasons—full sweep; we must give them full sweep, and so sift to the bottom the presumptions for and against the supernatural.

§ 8. The presumptions for miracles—the reasons which should prepare us to receive them—are, we believe, more profoundly consonant with the whole

scope of human life than the opposite presumptions. (1) Miracles are in harmony with the constructive forces of the world, if we accept freely both elements that enter into it, the physical and the spiritual. The supernatural, deeply rooted in the constitution of man, its most significant factor, implies an equal preëminence of intellectual power in the world collectively. Wherever we start, whatever we discuss, we shortly reach the supersensual, and shortly after the spiritual. Even matter itself, in its existence, properties, laws, is interpreted at once by an intellectual endowment of supersensual forces, that include and express the relations and coherence of thought in things. When we pass into life, plastic powers at work in a thousand transcendant ways become a part of the problem, and when we reach mind, unseen powers are interlocked everywhere with physical forces, working through them their own special purposes. If thus we start at the very beginning with the supersensible, and in the constitution of thought pass up to the supernatural in mind, it lies plainly in the line of this rational progress to recognize a Supreme Power, a sufficient source of every one of these manifestations. As the body of man, a physical microcosm, is permeated by mind as a working power, so, evidently, may the Universe be permeated by a presence still more deft in working its way among physical things. The movements in the Universe, as of light, heat, electricity, are as subtle as and far more rapid than those of nervous energy in the body. Miracles are consonant with this predominance of the supernatural.

(2) Miracles serve to emphasize the rational elements in the world with a force not otherwise attained. The physical tends by its magnitude and persistency to overshadow the spiritual. The spiritual has occasion to assert itself, at least so far as the feeling of man is concerned. While the spiritual underlies the physical, it is not identical with it or confined to it. It has its own superior ends, which may be reached by its own superior means. The vigor with which every empirical tendency attacks the miraculous, itself shows the support which the miracle gives to mind, and the balance it helps to maintain. Reason is certainly at liberty to assert itself above the physical as well as through it. Indeed, if it never appears otherwise than by the physical, the physical cannot fail to crowd it out in men's thoughts. It belongs to reason to accommodate itself to any defect in the means employed, or in the persons addressed.

(3) Miracles express and support personality. Religion turns on the personal. It must admit prayer, evoke worship, call out love, and all these are at one with that Personal Presence supremely expressed in the miracle. If the miracle, as a possible and rational thing, disappears, it carries with it prayer, and makes remote and inefficacious the inner circle of those higher affections which it is the supreme office of religion to call forth. A heavy, suffocating atmosphere rests down on that spiritual life by which alone man can inherit the world. The reduction and undervaluation of life, which accompany this critical tendency in our time, are very plain.

(4) The spiritual training of the world has actually proceeded on convictions inseparable from the miraculous. The worship, the psalmody, the prayer of devout spirits or of great assemblies, have been permeated with the feeling of an immediate, Divine Presence, involving supervision and open to intervention. The man who cannot assert the possibility of a miracle, can hardly assert anything which calls forth faith or feeds affection. Human feelings cannot be touched in their depths, nor controlled in their full force, otherwise than by a Power at once above them and sympathetic with them. This is preëminently true of popular thought, that reaches truth as often through the ministration of the emotions, as emotions by the aid of truth. A disposition to despise as inferior and false the conditions of popular progress, indicates a conceit of intellect that has not much to commend it. The hymn that ascends in volume, borne up by the voice of a great multitude, has an emotional force that springs from the constitution of man, and has significance therefore in spiritual discipline. Some reason as if it were not rational for a Divine Discipline to be efficacious, to treat men according to their actual endowments, to handle them under the real terms of their lives. The spiritual training of the world vindicates itself in that it has actually been fruitful and progressive.

The presumption in favor of miracles admits of enforcement in many directions, but the root of it is the presence of the supernatural in the world, its priority of power and importance, and the discipline

of men as locked up in it. While the supernatural becomes more rather than less manifest in the progress of truth, its extreme expression in miracles plays a different part in different phases of development. Nor is this fact out of harmony with the general method of organic and intellectual growth. Higher forms of life constantly supersede lower ones. The offspring is first embraced in the parent, and then passes into an independent form. Reason adds itself to instinct, and later crowds it out. Indeed, the existence of an era of miracles and its disappearance under the action of rational forces of broader scope, is a relation in harmony with evolution, unless we insist on an evolution that excludes all supernatural forces. A miracle is milk for the child; it belongs to a stage of partial knowledge and obscure perceptions. Miracles can no more take the place of rational insight than crutches of sound limbs, though like crutches they may help one on the way to health. The disposition to seek for signs is one implying the weakness of reason. As the natural and the supernatural gain in the mind their true relation to each other, as the one is felt to be everywhere permeated with the other, and to be its true expression, the need of the miracle and the fitness of the miracle pass away. When knowledge is as yet incipient, and the mind is unable to grasp firmly both its terms, the miracle may help it forward and open a passage for truths that would otherwise be lost. When the mind is confusedly seeking for reasons, like one groping in darkness, even then flashes of light have a service. Yet they

are not day-light; and like the strong contrasts of early morning will all disappear as the full day approaches. The question of miracles seems to be one of the admissibility of the partial and transient in the spiritual world, a question therefore at bottom one of development.

The miracle has a far more transient service than the kindred fact of prayer. The one ministers to general conviction, the other to private faith, while both involve the submission of the natural to the supernatural. Plainly, universal laws can not be, and are not, fortunate in all their results, since they do not contemplate specific cases, but general relations. Equally clearly, universal laws would lose all their advantage, if they were to be set aside in behalf of ignorance, indolence and caprice. Is it not, then, plain that universal laws may be advantageously handled by Supreme Wisdom and Love in behalf of diligent faith, that freely commits itself to this Personal Presence? To think otherwise is to overlook spiritual relations; is to give an independent value to the inflexibility of physical things, and an importance to laws aside from the purposes they subserve. This is to submit higher spiritual ends to more gross and physical ones; is to affirm a constructive necessity in law beyond the purposes of reason. Reason does not by one exercise in shaping law wave its power and lock up its wisdom forever. The superiority of reason as expressed in reasons, lies in their flexibility; its inferiority as expressed in causes in their inflexibility.

As the supernatural discloses itself more perfectly

in and by and through the natural, prayer will pass more and more into silent trust and wise diligence; not because intervention is felt to be unfitting, but because the wisdom and grace of God are felt to be present unsolicited, and to be sufficient of themselves without importunity.

In addition to the philosophical presumptions which run before miracles, there are historical presumptions which follow after them. The most irresistible evidence against them is the great number of them which can endure no critical examination, the undoubted deception and darkness which have attended upon them, and the gross superstitions and even vices which have been strengthened by them. The very great force of this objection no mind can fail to feel. Yet, carefully considered, these very facts disclose another light falling upon them. (1) The depth of the appeal which the miracle makes to human nature is seen in them. A constitutional tendency seems to be involved in them. All great movements must be assigned a sufficient reason. (2) It is probable that some residuary facts, some truths, lie at the bottom of phenomena so extended and persistent. Even spiritualism, with all its fooleries, has its disclosures, its unknown and subtle agencies. (3) There is a remainder of proof that cannot be disposed of except as we blow it away by antecedent presumptions. (4) All great movements of the human mind, passing through the phases of development, are accompanied by errors protracted and well-nigh fatal. Chemistry is rooted in alchemy, astronomy in astrology, civil liberty in

anarchy. (5) While miracles have united themselves to the worst, they have also united themselves to the very best tendencies prevalent in the world; Socrates had his familiar spirit.

The presumptions for and against miracles will wax and wane as we draw near the physical or spiritual side of thought. They are not such as to settle, by a critical canon, the history of the world. This history itself, as a spiritual evolution out of darkness into light, must settle the miracle. Very plainly the movement will always be away from the miraculous to the natural, from that which simply signals a truth to the truth itself. The quietness and clearness with which the mind can abide with normal facts is the test of spiritual power. The significance of the miracle, having once subserved its purpose, momentarily declines. This very fact makes a succeeding age, setting up its own standards as absolute, incredulous of miracles.

The words of Christ, by the intervention of his life, seem to be inextricably interwoven with the miraculous. There is in him that fulness of the natural and supernatural which is of the very essence of revelation. Indeed, without this combination it is not easy to see how any revelation could be made which would not lose its spiritual significancy. If truth is not effulgence, effulgence excellently becomes it.

None the less, the words of Christ it is which give clearness and conviction as time advances. The match may kindle the fuel, but the fuel glows with its own heat and light. The miracle simply hast-

ened those spiritual combinations of thought which are revelation. The miracle has comparatively little direct significance for us, unless we allow it, as in itself false, to honey-comb the intellectual and moral characters with which it has been associated. Nineteen centuries render any historical proof too weak to bear the weight of a strong rational presumption against it. The miracle must fade into distance; to retain its force, its merely miraculous proof, it must become a perpetual miracle; and a perpetual miracle is the suspension of reason, is spiritual syncope. On the other hand, truth as truth gains force with every century, disclosing more and more the extension and indestructibility of its light. The inner power of the revelation has been gaining ground on its outward form with every intervening century, till to-day our chief interest is in not allowing the one to weaken or contradict the other. We are fearful lest the miracle misunderstood, and contracting within itself an intellectual and spiritual opacity, shall lie like a veiling mist between us and the truth. Revelation would thus become a light muffled in its own smoke.

Christianity stands (1) by its perpetual appeal to the highest spiritual insight of the human race; (2) by its power to bring to those who accept it the purest personal discipline; (3) by its own historic force, as expressed in live and actions; (4) by its historic hold on human society; (5) by remaining to-day, as hitherto, the most comprehensive and holiest truth offered to man. So standing it carries with it the miracle as one spark struck out in the

collision of forces, way back in the darkness, that helped to kindle this great light.

If, then, the world's discipline, in spite of all delays and failures and false steps, has been a discipline, abolishing its own feebleness by its own progress, this fact most distinctly discloses a Supreme Spiritual Power, working all things upward toward itself, and disclosing their fulness from that supreme elevation.

§ 9. Final causes are involved in every discussion concerning the being of God. Reason has two movements. It traces effects backward through causes, but it also more immediately in its own behalf rises above special lines of causation, and asks: What purpose do they singly and conjointly subserve? In what structure are they framed together? Referring all things to itself it inevitably inquires: Why were they made? Reason can not stultify itself by overlooking this relation. It will not travel a road without asking whither it leads. This is perfectly plain when we deal with human actions, the immediate and manifest products of reason. If any work of man is before us, we must inevitably put the two inquiries: For what was it made? and, By what means was it made?

Nor could we have any interest in the causal relations of the world were it not for the constructive purposes they seem to us so plainly to contain, and those further purposes to which we can ourselves put them. However staunchly we may deny this fact, and however carefully conceal it in language, causes concern us because (1) they are construc-

tive, because (2) they can be made still further constructive.

The world, as a whole, delights us not by mere magnitude, but because it is an integer; because intentionally or accidentally, with sufficient reason or without reason, its immediate parts have relation to each other, are organized with each other in the fulfilment of special and general purposes; are actually under the very connections we indicate by final causes. The more markedly is this true as we consider those more narrow and complete integers which make up the organic world. We can not discuss vegetable, animal, rational life without giving attention each instant to the relation of part with part, and of all parts to the whole; without inquiring into the purposes actually embraced in the several functions of the living thing.

The prejudice against final causes has had some justification. (1) They have been sought into too directly and too narrowly. (2) They have been sought into to the oversight of efficient causes, of equal importance. (3) This too hasty pursuit has led to a very manifest neglect of the limitations put upon ends by the means involved in them. The force and sweep of law have thus been lost, and replaced by narrow purposes sought directly. All this needs correction, but it is no correction to again cut asunder the rational process midwise, and to make the half, hitherto neglected, the whole.

Grant freely that the whole Cosmos has been hastily gathered up into the fortunes of man by the explanations of final causes; grant freely that we

have hastened on to a fanciful or partial purpose that things subserve before we have understood their structure, their past connections, their inherent limitations,—and it does not thence follow that the movement has been false, but only that it has been ill-proportioned. Whether what seems to be order and service in the world are order and service, are the very questions involved in theism. But the first branch of the inquiry, the pervasive presence of order, science is most diligent in unfolding. Now order means relation forward as well as backward; it means forces that have worked and are working constructively. The one half cannot be taken without the other half. The path behind us defines the path before us, and neither portion can be discussed except in relation to the other portion. It is this very reference of the past to the present, of the past and present to the future, that forces upon us the problem whose solution is theism. It is the extent and fundamental character of these connections that have so often compelled a recognition just at the close of a destructive argument, and opened afresh the discarded relation under some enigmatical term like the Unknown.

Inquiries into final causes, either openly or in some disguised form, are unavoidable in all large synthetic discussions. Our time has sheltered its prejudice and hidden from itself its pursuit of final causes by Natural Selection. The theory of Natural Selection is made up of two parts of very unequal value. The fit result in any one form of life is reached by accidental variation, but this result, as fit or fittest, is

at once granted all the efficiency of a final cause, well chosen and successfully attained. The first step and the most important one, that of the formation of favorable varieties, is rapidly and obscurely passed over; while the second step, which follows simply as the consequence of the first step, and with it involves the force of final causes, receives strong emphasis, and, as the survival of the fittest, becomes the gist of the theory. Even this half of the doctrine covers the facts in the majority of cases quite as well when simply and clearly put in the language of final causes. Plants and animals survive because they are fitted to their conditions. This is the primary fact; the secondary fact is that when they push each other on ground relatively common to them, those most fit win the field.

Take the case, so often referred to, of imitation among insects, an inoffensive species finding protection by conforming to the marks of an offensive species. This one is supposed to approach the other in appearance by a protracted series of slight changes. For this variation no sufficient reason is given. The earlier stages of transition would afford no appreciable advantage, while the chances against a continuous series of variations in the right direction are incredibly great. So far the reasoning is weak and insufficient. At the next step the stolen force of a final cause comes in so vigorously as to give coloring to the whole argument. This purpose of imitation being accomplished, it cannot fail of the results referred to it. This it is which is relied on to make both branches of the argument acceptable.

In other words, the wisdom of a wise thing is seen to be wise, though the theory has no light to throw on the way in which that wisdom found entrance. This is vigorously rejecting a front entrance and surreptitiously creeping in at the one in the rear.

Here, then, is the strongest proof of rational purposes in the world. We deny them; we set our faces against them; we introduce a new view to displace them. Yet, on careful analysis, we find that view is strong just so far as it has furtively introduced them, and is without light so far as it has rejected them. Final causes involve theism, and final causes are not and cannot be escaped in any comprehensive inquiry into the structure of the world. Even when we are tracing exclusively efficient causes, the entire light of the process shines upon it from the manifest order and combination of which they are constituents.

§ 10. Still another inquiry with which modern thought is busy involves, in yet a higher form, the theistic idea; it is that of the philosophy of history. If there is a true philosophy of history, it is present as a supreme spiritual product in some way provided for in every part of evolution until now. On the other hand, if there is no philosophy of history, or only such a philosophy as shows it to be the mere product of physical causes, the fact makes strongly against any Spiritual Presence in the world. Such a Presence must shape all things for itself, and ripen all things into a spiritual ministration. The intellectual world is full of this idea of social development, and the study of history has thereby gained a

great impulse. Though we may be compelled to leave out of view many tribes, portions and periods in human history, there is, none the less, on the very face of the facts, within the narrow scope of historic nations, manifest development. Though the stream winds its way through extended marshes, and drops off from time to time into sluggish lakes, it none the less has an unceasing onward current. In the egg, the nucleus of life, though a small part of the whole, draws the attention. This progress has been referred to simply physical causes, and an effort made to construct a philosophy of history on this basis. Its failure is complete. If we were to take periods separated by a thousand years, and compare the different occupants of the same portions of the globe, we should find that the uniformity of physical conditions had not prevented the greatest changes in social life. Indeed, the modification of external conditions of soil and climate, by the altered handling of different races, is quite as obvious as the effect of any one set of physical circumstances on national character. So true is this, that civilization has been constantly on the move, and has already passed over a great variety of physical conditions. No locality, by any preëminence of advantage, has, then, any permanent command over civilization; and hardly any locality, by virtue of simply physical features, has excluded it altogether.

To this first element of growth, then, there must be added one more efficacious than it—primitive traits of character in nations and races. This element has two forms of expression, national character

and individual character. The tribe first springs from the individual, and then the nation is built about the tribe. A few ancestors are able to impress their characteristics on the protracted history of a great people. Abraham and Jacob survive in the Israelites of many hundred years. But national character holds the prevailing tendency in a dilute form. Single persons are sure to arise having the predominant type in a more clear and vigorous way. These, both by agreement and disagreement, immediately become leaders, and push forward the national advance. It is to national character, as the germ of all dormant possibilities, that the external conditions address themselves; and these conditions no more call forth growth, without the seeds of growth, than a soil begets its own flora. It is by the first forces, and by the constant nourishment of individual character, that national character is initiated and maintained. These two, physical conditions and national characteristics, are the relatively fixed terms in development.

But progress itself gives new and changeable conditions. On the one side is inheritance, physical and moral, as a variable law, the present passing into the future with many secondary changes; and on the other, there is history, the violent action of race upon race in conquest, and in the subjection of nations or parts of nations to new conditions of civilization, language, and religion, and also the peaceful extension of these several influences from country to country along the lines of intercourse.

Evidently we have in these very changeable

agents grounds for very conflicting and apparently fortuitous results. The progress achieved must be one which slowly thrusts aside accidents, and compacts in itself leading tendencies. Of these few elements of growth, the more primitive, interior and inscrutable are character and variability in inheritance, and these receive the less attention; while physical conditions and historical changes are more manifest, and correspondingly attract the eye. Yet these are only the opportunities of which the more secret energies of moral life avail themselves.

That these very shifting and, in their passing forms, apparently accidental combinations have wrought true growth among spiritual things, as certainly so as the vacillating movement of the seasons among organic things, is so evident and at present so often enforced, as hardly to call for particularization. (1) This development is indicated not simply by the rapid growth of knowledge, but still more by its increased serviceableness to the mass of men. Man's present mastery of the world, the amount of labor laid by him upon natural agents, are incomparably greater than ever before. This movement of amelioration has now extended through so many nations, and over so large a part of the earth's surface; it has gathered the strength of the world so completely within itself, as to be exposed no longer to any, the slightest, danger arising beyond its own domain. Barbarous tribes are quite powerless in the presence of enlightened nations.

The press, as a means of increasing knowledge,

and the newspaper press, as a means of disseminating it, do not simply make loss and retrogression impossible; they give a rapidity of movement to human thought wholly novel in the world's history. Nothing but an inner decay of human powers can now arrest this movement. (2) Social construction, social institutions and estimates, are keeping pace with this knowledge. The wrongs in society are being redressed; its wounds are being healed; its unjust inequalities are being removed. All are entering more freely into their share of the common inheritance; and thus the danger of internal rupture, far greater than that of external violence, is giving way. Much, indeed, remains to be done, both along the lines of justice and good-will. But the right movement has been initiated, and it is already clear, decisive, and successful. A social organization just, fortunate, considerate, and solid is becoming an ever enlarging fact. (3) These gains all culminate in and are sustained by true spiritual development. The movement at this point, though comprehensive and fundamental, is less conspicuous than changes more exterior. Spiritual life is preëminently personal and independent, and those things which are accepted as its external marks are peculiarly illusory. This independence and personality, which are its essential conditions, are every day enlarged for it. It deals directly and freely with the highest questions. These topics are before the minds of men in their full breadth, and are treated with a thoroughness, interest, and extension of inquiry quite unusual. The unsatisfactoriness of the results often

reached is not a material abatement of the value of this fact of enlarged discussion. A certain deadness of dogma gives a sense of strength and security quite deceptive.

It belongs also to spiritual life to express itself in human sympathies and charity. These sympathies and charities are its most priceless product. Individual good-will, the watchfulness of nations over all their own, justice and integrity between nations, are on the gain. Not only were spiritual ideas never more clearly discerned than now; they have never been more efficacious in drawing out human affections.

This growth has all the features of a true evolution. (1) Each step has been joined in a real sequence with preceding ones. Our civilization and our faith send down tap-roots to the earliest stratum in the historic period. (2) This progress has, in each stage, retained the gains of previous times. Jewish theism is our faith, Grecian art our culture, Roman law our law. Far more than this, the slow composition of nations, which began away back in the great monarchies of the East, and which found a second acceleration in the middle ages in Europe, has yielded those bonds of strength which hold us together. (3) This growth is not merely serial; it has formed itself about one axis, one spiritual unfolding, increasingly pure and extended. Theism has given it a moral unity, which has united in impulse all its ministrations, especially in their bearings on the common mind. Without this prevailing idea, nothing continuous or permanent would have been

reached. This was the predominant impulse which ancient life yielded to modern life, and this the force that built the new out of the ruins of the old. The history of theism is inseparable from that of civilization, and increasingly as the ages advanced.

In the middle Roman development a very general, sagacious and searching scepticism prevailed. It served rather to break down effete systems and clear the way for a purer theism, than to resist its progress. The dominant thought of Christianity became the constructive agency of society amid the dissolving mists of mythology. Again, in the fifteenth and sixteenth centuries, Christianity had become so hidden beneath the dêbris of barbarism that its spiritual life seemed about to be smothered. Scepticism and fanaticism, immorality and piety, grew rankly side by side. The purer life of the past was deeply buried under this alluvial drift. Yet concealed germs here and there began to push, and took on the new vigor of the Reformation. The scepticism of our own time, in harmony with this historic development, can only issue in a still further purification and triumph of theism. Any other result would not be continuation, but overthrow.

(4) Akin with this continuity of growth has been its increasing generality. In the Roman period and earlier, civilization and power tended to gather into one race or one nation ; or if separated into two nations, the equilibrium was unstable. Now there are many relatively equal nations, many types of civilization, and all are quietly held in one system. This separation of enlightened nations into independent

integers is a fact of the utmost moment. The actions and reactions of intellectual and social life are greatly multiplied. Questions of social construction, of justice and morality, arise in many quarters, find many terms of solution, and pass with corresponding rapidity to their fullest answer. This division of life is on a grand scale, like the special senses, special organs and special powers which gather together and sustain each other in the human body. It is a fact which discloses the progress already made, and hastens it onward.

(5) This growth, like all growth, takes in both elements, fixed physical conditions and predominant plastic powers—the natural and the supernatural. The plastic powers, the constructive ideas, have found expression and application chiefly through the individual. There is a spirit in man, and the inspiration of the Almighty giveth them understanding. Those who have been truly efficient in guiding and shaping growth have been those who, in one way or another, have had a large measure of spiritual life; who have felt the unity of truth, and so have worked under that unity. Every great spirit remains a term not covered by simply physical inheritance, but one gathered into the higher lineage of the divine life. Just at these points the electric circuits of truth are turned, even for the ordinary eye, into electric light.

"Genius," says the historian, Ranke, "is an independent gift of God; whether it is allowed to expand or not depends on the receptivity and taste of its contemporaries."

Thus it becomes a supreme question, in reference to any place and any period, Shall he find faith? Faith is no other than higher truth so closely held as to be productive of its appropriate spiritual emotions, while these, in turn, give the conditions of still deeper insight. In other words, faith is the true growing point, involving at once the most manifest and the most subtle agencies by which the lower intellectual life passes into a higher spiritual unfolding; by which the mind penetrates to and is quickened by the Spiritual Presence of the world. Of all things hanging in the sunlight, the leaf alone is each instant in recognition of its forces, and building up new products by means of them. Thus does mind, duly open in thought and affection to Mind; make the second transition by which the narrow, the hard, the obscure, the selfish in life, pass into the broad, the gracious, the clear, the pure; into light and love, the constructive elements of that one Presence which makes the spiritual world. One door opens into it, yet a door at which all paths converge. That history is not a hopeless riddle, and that its solutions lie in this higher faith, are facts which thoughtful minds are recognizing in one or another direction, with one or another degree of fulness. The only explanation of human life is a life yet higher, and a higher life demands a medium in which it can move. This Pure Presence is as certain under the integral order of things as are the impulses it gathers up, harmonizes and unfolds. The spiritual, understood as the spiritual, used as the spiritual, will no more let us step abruptly, moving

forward, than will the causal, moving backward. We move backward under the one impulse, simply and singly because we receive more constructive light. We move forward under the other impulse for the same reason—more light. Light is the only justification of vision, and is the sufficient justification of all vision; and this equally whether it shines on the way behind or before us. Happy is he who condemns not himself in that thing which he alloweth. The eternal consistency of part with part is equally the revelation of science and religion. Mind is the source of light in the intellectual world. Theism enthrones mind, and so becomes the largest disclosure of truth. There is darkness left, but it is darkness far back compared with the darkness that encloses any simply physical theory of the world, and of human life in it.

In summing up this argument, it is to be remembered that strict evolution gains ground by distracting the eye, and directing it to a multitude of detached cases capable of a plausible presentation. Its failures are apparent only when the whole field is considered in its great spaces. Theism, on the other hand, gains with every extension of vision. Its convergences are increasingly grand, and carry with them rapidly the accumulating proof of concurrence.

The eternity of matter in evolution is impossible; from the beginning it bears the stamp of mind in its simplest elements; these elements in quality, affinities, and quantities, are constructive. Life, a new term, takes up the work in two forms. All

these agencies, with a precision reaching to every attribute and every relation, are built into one world; its several parts mount up to one throne; and on this throne appears intellectual life; and this life fulfils its purposes only as it passes into spiritual life. This one ultimate product includes all and explains all; and this product implies, seeks, and thrives in the light of Divine Life.

CHAPTER VIII.

THE PROOFS OF THE GOODNESS OF GOD.

§ 1. The proof of the goodness of God is closely united to that of his being. If God is, he is most certainly infinite in power and complete in wisdom. While the Universe is a finite product, and under the idea of causation only involves finite causes, under that of personal potentiality, it plainly implies unmeasurable scope in thought and execution. The proof at this point could not be increased. Any additions whatever to the Universe must escape our observation, as its present limits are quite beyond our knowledge. The wisdom and power of God are capable of no higher proof by the mere aggregation of results. If there is nothing in the work itself which forbids the supposition, these two attributes are made plain.

But if God is, and is complete in power and wisdom, he must also be perfect in goodness. Complete wisdom must, by an intellectual and moral necessity, carry with it perfect goodness. The malevolent being is not wise either in reference to himself or to others. That goodness is the ripeness of wisdom, that it is the final fruit of reason, are

more and more evident with each advance of thought. This dependence is one which lies in the constitution of reason, and hence of the Divine Reason. The least measure of malice would be a flaw in the divine wisdom, as well as in the divine goodness. This dependence being so fundamental, all reasons against the divine beneficence make directly and strongly against the divine existence. Not only would every rational being be reluctant to accept the proof for the existence of a being omnipotent and omniscient without perfect goodness; the inner incongruity of the conception would be the strongest reason against it. We must, therefore, weigh carefully the evidence for the goodness of God, both for the attribute itself, and for its relation to the general proof of his being.

In considering this evidence, there are several important antecedent points touching our own powers of apprehension and appreciation. (1) We stand comparatively at the beginning of a great system, and are not, therefore, in a fortunate position to pronounce upon it as a whole. It is the later, higher, more purely moral stage of the development which must settle its value. The moral movement is as yet incipient. Evils, difficulties, and delays cluster about its opening eras, while its great gains, its facile growth, its overwhelming compensations, lie in the future, a future too remote and too alien for our complete anticipation. We are now judging the entire day by the coldness, darkness, and discomfort of the early morning. There is time enough and there is growth enough before the world to sweep

into utter oblivion this waywardness and these sufferings of its ill-ordered youth.

(2) Nor are we comprehensive and wise judges of moral discipline, or of its proper terms, when ordered on this grand scale. The haste and failure of most human training show this. We strive in one way or another to crowd moral growth, to put physical forces and intellectual coercion into it, and the results, with sudden revolt, betray us. There is as yet but very little proximately wise discipline among men, and but few men, therefore, who are safe judges either of its methods or ends. The goodness of God which comes under our criticism is not passion, is not mere love, but wise love. The guiding agency is wisdom; goodness is simply the impulse that works under it. As the extent in space, as the survey in time, which come within the divine plan, greatly transcend our thoughts; as the wisdom with which these parts are united under a controlling purpose often escapes us, unusual diffidence should belong to us in our judgments on the divine love. The larger share of this love, with the larger share of its methods, must, from the nature of the case, be hidden from us; and when the love is hidden, the incident evils crowd the vision and become clamorous. These evils touching us and our friends, unilluminated by ulterior light, will seem to us very real and very dark, and our judgments, at best possessed of narrow and vacillating force, will be beaten about like vessels laboring in the storm. It is in some sense a preposterous thing for us, in our finiteness,

to sit in confident judgment on the divine grace, moving with measureless scope through immense periods; not that the divine government needs protection from criticism, but that we need protection against hasty censure. If we are wise we shall decide these questions by prevailing tendencies, by the large sweep of events whose outline we can follow. We shall then suffer the light slowly to disperse and swallow up the heavy masses of shadow that still fill our horizon.

(3) We ourselves are pressed by this discipline, are more or less reluctant parties to it, would be willing to substitute fiat blessings of some sort for the natural fruits of intelligence and virtue, are still possessed with the notion that this is in some degree possible, and the very best of us at times feel painfully the unremitting demands of grace. The heart of man is but slightly won over to disinterested love. Virtue is, therefore, still to it as an ebbing tide. For the time being it seems to draw down its resources of pleasure, and to be waiting for a new conjunction of forces, before it shall come flowing back upon the soul of man with the vigor of a world-wide movement. We are too immediate and too reluctant parties in the divine method, pressing us under weighty conditions of life, to be perfectly fair judges of the things about us. It requires unusual purging of the eye, and quelling of the heart, to decide whether the progress of events is gracious or otherwise. Even if no particular pressure of danger is disclosed along our own narrow path, unwise and petulant sympathies may easily

mislead the judgment. The outside trials of men are so much more penetrable than their inside experiences, that compassion becomes with us a chief perverting agency.

There are some general considerations which must be present to our thoughts before we can speak safely about the discipline of the world. It must be judged under the light of its own prevailing idea. Read otherwise, it is misread, and filled with the confusion of the mind that interprets it. We must accept and expound the history of the world as a moral discipline. It is on this basis that the question of the goodness of God arises, and on this basis it must be settled. It is not a question of pleasure simply, but one of training, one of growth, one of spiritual evolution. It is not, therefore, a question of the past, or of the past and present, but of the past, present and future; one to be decided by the scope of the entire movement, and preëminently by its ultimate results. Growth is the initial word, the prevailing word, the final word. All that is requisite to moral growth is admissible; all that interferes with moral growth is inadmissible, no matter under what disguises of pleasure it may appear. God gives us a rehearsal of his own government in the wise training of a child. Human love we find daily failing on the side of leniency; the failure is none the less a failure. The thing to be won by training is true, simple, strong manhood. Kindness that feeds exaction is fruit flung to a beggar. That moral growth is the fundamental idea of the world is seen in the fact

that on this point of integrity, as enclosing goodwill, turns the whole moral controversy concerning the character of God. This is the gist of the question: Is God perfectly good? It requires, therefore, no distinct proof that the question must be answered in its own light.

This end of moral life involves some things and excludes some things. (1) It can not be lifted off a moral basis. It is put on this basis, and must be kept there. No matter how slow the moral movement may be, it can not be supplemented by a physical push. This is to mar all. Moral evolution accepts the tardy steps of experience, insight, choice, responsibility, and it must stand unwaveringly by them. Any haste to get beyond them is really to fall behind them—is to finish a house by magic which we undertook to erect under natural law. Sin must remain sin in its moral estimate and moral fruits, and must rest with the sinner. That which is avoidable is not to be thought of or spoken of as if it were unavoidable. Accepting a moral system, we accept the responsibility of all the parties to it, and this responsibility is a limit to the responsibility of Him who, in wisdom, ordains the moral discipline. Sin and evil, as liabilities of the system, are accepted when the system is accepted, and are not afterward in themselves simply to be offered as an objection. Responsibilities are capable of division and apportionment in a moral system, and do not sweep everywhere and mar all participants. The sin finds real arrest in the sinner, and its moral pressure is at this point only.

The way in which, in the discipline of our children, we further and we check the moral unfolding by personal pressure, serves to separate our training from the far more general training of the world at large, and causes us to judge the latter disparagingly. (*a*) Much of this interference is ill-advised and unsuccessful. (*b*) So far as it is well-advised and successful, it is contemplated under the larger schooling; is the margin left for annotation. (*c*) The generality of conditions carries with it generality of method. This relation is involved in law.

(2) A moral system, as a wise discipline, includes laws both broad and fixed; and the evils incident to them, if the laws themselves are well taken, give no item of accusation. Reason remains reason, though we are wading in deep waters; premises must, in spite of our sufferings, be allowed to carry with them their conclusions. Having accepted the one, we have accepted the other. We must not repeat against results the objections which have not availed against the constructive causes. The goodness and fitness of moral law being conceded, its utmost consequences are embraced in the concession. It is mere weakness of nerve not to carry through the wise method.

This conception of moral discipline as a means to moral life, itself approved in its own light as the highest attainable object, well worth any needful sacrifice, shuts out the notions of happiness and justice—which is only the equalizing of the conditions of happiness between man and man—as offering a sufficient test of the world's training. Utilitarian-

ism through one of its great masters, J. S. Mill, affirms that the course of nature is full of cruelty and injustice. This is an affirmation quite in order under an ethical philosophy that makes happiness the supreme test, and which overlooks the prevailing idea of moral discipline. If one, out of sympathy with the inner life of virtue, were to criticise the wisest training of a parent, whose conduct rested on a notion of right, he would almost inevitably think it both cruel and unjust. Moral discipline, judged in reference to pleasure, can hardly escape censure, for it designedly throws pleasure into the background. The criticism, therefore, is instantly met with the denial that pleasure, and the apportionment of pleasures termed justice, are the ends sought for in wise schooling. The moral discipline of the world, like that of the family, admits suffering freely, admits inequalities of pleasures and of sufferings freely, and asks but one question: Do these pains and diversities minister to growth as its necessary concomitants? This answered in the affirmative, pleasure is freely set aside, pain freely enters, and the formal divisions of justice are pronounced inapplicable. One justification, and one only, is sought for every measure—that contained in growth. Not to institute the best conditions of growth deterred by tenderness, is unkind; to institute them is both wise and kind. Justice is an idea applicable between equals,—between man and man,—and not one fitted to control the discipline which superior intelligence brings to inferior intelligence. Efficiency is here the ruling consideration.

This moral method also excludes the action of mere power as power in the pursuit of moral ends. With a strange narrowness of thought, this argument of power is used against the divine grace, as if it were one of overwhelming import. It runs thus: Infinite Goodness would wish the world to be perfect; Infinite Power could make it perfect. As it is manifestly not perfect, either there is no God, or God is not perfect in power and goodness. If we check our fleet steps for an instant to define perfection, and settle its relations to growth; to define power, and to see how far virtue is dependent on it, our conclusions vanish at once. The first point has been sufficiently covered already. There is no perfect condition for a moral being save that involved in virtue; while virtue includes growth, and growth implies these apparent imperfections. The second point is still more simple. Power is not the ability to do all things, but only to do those capable of being done. Power has a nature and limits of its own. It involves the ability of shaping external, physical conditions. Power cannot alter the laws of mind; it cannot reach new conclusions while the premises remain the same. Power does not annex conclusions to premises; this is the office of reason. Power can no more transcend its own nature than can wisdom or virtue. It can do what belongs to it to do, and no more. Now, virtue is independent of power; the two do not cover the same field. Power does not extend to virtue. A virtuous world is not the product of mere power. The underlying weakness of Utilitarianism exposes itself in the confident way in

which it advances this argument. God can make a happy world, a perfect world when happiness and perfection mean physical and not spiritual pleasures; but to make such a world would be a retreat from moral life into well-balanced animal life. If we keep these limitations involved in the inner relations of reason in view, the mercy of God will certainly appear so plain as to add to the force of the argument for his existence.

§ 2. (1) The world is governed everywhere by laws, and these laws are all constructive, are all in their primary force beneficent. With a few exceptions, of which we shall have occasion to speak, all would readily admit the assertion. It has been and is the great enthusiasm of science to illustrate and enforce it. Yet it is a fact of the utmost moral import, since it expresses at least a prevailing benignant purpose, which even no passing mood of malevolence has modified. Many evils, indeed, follow in the train of law; yet law itself has reference to order and well-being, and is only the more forced on the attention of rational beings by these very calamities. The laws which govern fire, water, steam, render the action of these powerful agents in the highest degree serviceable, though carelessness may kindle a conflagration, or leave a reservoir to be broken, or a boiler to be exploded. The laws which control seasons, rains, and floods, admit of much devastation; yet on these laws turn the fertility of the world, the variety and beauty in the progress of nature, the tests of skill and foresight in man. A more mechanical adjustment, a more equal distribution, would wholly alter

both the form and force of law, would carry unthought of modifications everywhere, and, if productive of some advantages, would as certainly be attended by great losses. The chance-element which now enters into human life, by virtue of the extended and unforeseen interaction of various laws, plays in discipline almost as significant a part as the fixed terms. A nature that came round in its ministration at fixed intervals in fixed ways, like a gardener with his watering-pot, would bring with it unspeakable loss to man's higher nature. Such a world would become to him what labor is in a factory, with its hated precision and intolerable routine. It still remains to be shown that the laws of the world, either singly or collectively, can, in reference to a large beneficence, be improved. Criticism that fails of this is impotent.

(2) A vast amount of happiness is actually achieved under these laws—much animal pleasure, much intellectual pleasure, much spiritual pleasure. Health always means pleasure; mental activity means happiness; spiritual construction means blessedness. It is disease, ignorance, and vice that occasion suffering The product of the divine law, where the law is fulfilled, is happiness. Its actual product, under all interference and conflict, taking the whole animal kingdom, man included, contains probably a large overbalance of pleasure, and certainly so of physical pleasure.

(3) Growth means a steady increase of happiness. The world is comparatively young. Man, its supremely sensitive organism, is just entering on a

career which has been held back by the slow unfolding of the moral nature. This development, once well under way, will result in a rapid reduction of pain, and a rapid increase of pleasure. This is even now true in the physical life of civilized nations, and will be still more true in their social life, when the grand transition is well made from the desires to the affections. This simple fact, that happiness is on the increase, should at once moderate criticism and check complaint. Delays seem long to us, and yet count for little in the large circuit of great things. In their slow passage they develop the patience, moderation, and strength which will be found absolutely essential for the use and enjoyment of those better times that are approaching.

(4) The hardships of the world are not too great for the purposes of man's discipline. That hardship must enter in as a condition of physical, intellectual, and moral training is evident. These hardships are the occasions of strength, sagacity, and virtue. They nerve the body, quicken the thought, and develop the affections. Not only does the good soldier endure hardness, his fine quality is the fruit of that hardness. That the severity of these incentives is not greater than the interests of man call for is plain. (a) The temperate zone, the zone of average difficulties, has proved to be the zone most favorable for civilization. A greater luxury of climate and tilth provokes indolence. (b) The children of the wealthy are often and manifestly injured by their advantages. The wisdom of their parents is lost upon them. (c) Civilization has most frequently

perished by the inner corruption of luxury. Men, though they have gained wealth and power by their own industry, have not been able to resist the new temptations these offer; have not bridged the gulf between the two stages of development, but have simply plunged into it. Physical and moral manhood has been worn out in the race, and the eager contestants have perished at the goal. This is always the crisis of growth, to take the new thing in the new way. We are perpetually winning what we can not use.

(5) Happiness is subordinated to virtue, and this for the sake of ultimate well-being. This is the true spiritual order, yet, at the outset it disguises all things, and confounds every calculation expressed in terms of pleasure. Such is the distinctly announced principle of the moral world; but this principle pushes happiness into the background, and clears the decks for action. It is not till the victory has long been won, that we can judge of the wisdom of the sacrifice. We then see that the promise keeps pace with the principle, and that pleasure does attend on virtue. Hence, the most virtuous have the strongest faith in the benevolence of God. This assertion would be wholly true, were it not for the subtle perversion of philosophy. It is the good, on the whole, who have the most courage to labor for the world; and labor implies a confidence in its controlling idea; and this, whether that idea springs from God, or is wrapped up in natural forces. Indeed, the best of those critics who weaken the mercies of Heaven, strive at once to find the conditions of hopeful life in things as they are.

(6) The argument for the divine love grows as we grow. No one objection against the divine grace holds. Advancing knowledge weakens it. We see more of the interior necessity, that is, the interior coherence and rationality, of things; we see more of their compensations; we see more of the demands of discipline. As experience thus enlarges, as the mind gains grasp, and the feelings become pure, the moral world better responds to our inner life, or rather that life, in its advance, is keyed to a more perfect harmony with its conditions. We discern amid the general confusion the outlines of order, and that all movement is in rapid construction about them. The wisdom and love of human thought, instead of finding less to feed upon, find more; it is not life but lifelessness that is famished. In settling the truth of this assertion, we must remember that it is the beneficent spirit that recognizes and correctly judges beneficence. If the most large-hearted men have thriven in the world, under its moral conditions, this fact settles all things. The argument becomes one of the highest significance.

(7) Men, as they attain their true moral station, as they push on in spiritual life, increasingly love mercy. He who formed the eye shall he not see? The best results of a human soul, if that soul is a divine creation, will be the truest ones, as nice definition indicates exactness in an optical instrument. Standing over against the Infinite, spirit before Spirit, we shall not, with our reflected light, shine brighter than the Sun of Righteousness. It is an absurdity in morals that man should find any hold

of criticism on God. If God is, he is perfect; the best is the truest. That man himself grows hourly in the estimate of grace, shows that he is pressing toward his spiritual perihelium, and is simply sharing its warmth.

§ 3. An obtrusive objection to God's perfect goodness is the suffering of the world. This suffering, a pushing and pungent fact, and one that the imagination easily exaggerates, is likely to weigh heavily with a person deeply involved in this displeasure, or with one inclined to narrowness in his estimates.

These pains of life, by their nearness and engrossing character, may, like clouds, hide much light, and suddenly make sombre the whole landscape. Our habitual exaggeration at this point should be distinctly itemized. (*a*) We have no sufficient reason to suppose that the suffering of animals is at all what we hastily think it to be. Our nervous organism is more extended and more sensitive than any elsewhere found in the animal kingdom, and very much more so than that found in most animals. Judging, then, the sufferings of animals by our own sufferings, we magnify them in the higher classes, and beyond all proportion in the lower classes. It is not merely possible but probable that stimuli take the place of sensations in animal life far more extendedly than we have been accustomed to think. Consciousness is not a term of any significance either in strictly organic or instinctive life. In both of these it is a waste and an obstruction rather than an aid. Of rational life, on the other hand, it is the

essential condition. In man, therefore, it is not only a much more pronounced term, it extends down much farther into the organic structure than in the brute. Sensation must go before reason, since it discloses the conditions on which reason is to act. Reason gains room in the constitution of man, because sensations enlarge its field, and put it on close terms with all the operations of his inner life. As sensation expands, reason expands; and as reason narrows, we have a right to infer that sensation disappears. Thus, brute life is relieved from a very large share of physical suffering.

Of intellectual sufferings, it can know very little. In the highest animals the intellect plays a subordinate part to the appetites. It is immediate in its aims, and hardly has a horizon beyond the present. This restriction in time cuts off the chief entail of suffering. It is out of to-morrow, with its anxieties and fears, that men take their chief intellectual disturbances.

(*b*) We exaggerate human sufferings in the same way, though not to the same extent. We unite the external states of others with our own internal feelings, and so interpret life. These two facts do not lie together. The internal and the external in every person are momentarily fitting themselves to each other, and so reaching a relative harmony to the great reduction of pain. It is only sudden changes which bring intense suffering. We imagine how we should feel if placed at once in certain unfortunate circumstances, and so expound to ourselves the feelings of persons so situated. We might

as well judge the sensations of a cool bath by the shock of the first plunge, or the later action of a galvanic battery by the action of fresh plates. Our judgments would be far more correct if, omitting differences of circumstances, we were to gauge the average happiness of men by our own happiness, or even their moral discipline, inscrutable as this is, by our own discipline. Life fits itself assiduously to its circumstances, and at each adjustment reaches a proximate equilibrium on terms of real discipline and relative comfort. The happiness of barbarians and their moral training are, it is true, on a much lower plane than the happiness and training of civilized nations; but their lives do not afford in their passage that painful and perplexed experience which they offer to us, when, in imagination, we thrust ourselves down under their burdens. We might almost as well think that the fish feels strangled in the water, or the angle-worm smothered in the ground. Human life, like a faded painting, must be restored in its own colors, before we can judge it.

The suffering of the world is not simply overestimated, it is so engrossing while it lasts as to anticipate all sober thought. We should remember that discomfort is a severe trial to judgment, and that we ought not to record its decisions under such circumstances as normal registration. One hour of suffering may hide many happy hours. If we add to this querulousness which pain begets, the sympathetic reduplications it suffers, we readily see that it may fill and occupy the ear with the din of com-

plaint, and, as a moral factor, win over the imagination.

Suffering, however, remains, after all abatement and correction, a notable and portentous fact in the world, calling for explanation. This explanation is found in the part it takes in intellectual and moral discipline. (1) The suffering of the world is incident to law—one of its direct and one of its secondary consequences. There can not be physical laws without involving the possibility of suffering in the sentient beings that are subject to them. By virtue of these laws, men construct railroads, and by virtue of the same laws they experience the disaster of a broken rail, a weak bridge, a car thrown from the track. This union is one established in reason, and can not rationally be broken.

(2) Suffering is incident to life in all its higher forms. Pains and pleasures are indicators. They declare the otherwise unknown condition of the body, and help both to impel it, and, through the mind, to guide it, in the right direction. "But," says the objector, "this easy-going theory leaves wholly unaccounted for the prodigious host of monstrous or imperfect organisms, and the appalling law of merciless and incessant destruction." * If we confine attention to animal life, to which alone the objection in its present form applies, it is not true that imperfect organisms, productive through their imperfections of pain, are relatively a prodigious host. On the other hand, the number is relatively very small. The reproductive laws do not often or badly miscarry. They seem to be wonderful-

* Diderot, p. 65.

ly fortified against the accidents of exterior agencies. More firmness would cut down the reciprocal action between the organism and its environment which constitutes a working and guiding power in the world. What precisely, then, would these objectors have? Rational objections imply a rational procedure, and what improved procedure have they to offer? Rational relations can not be combined in all ways, but only in certain ways. The choice lies between two or more methods. The rejection of one way must involve the election of a better way. If general laws are established, the objector turns to the accidents involved in them. If special intervention is affirmed, he cries a miracle, the overthrow of law, the weakness of a personal make-shift.

Whether suffering can, in consistency with justice, be admitted at all in the animal kingdom, is a question which springs from confused ideas. The suffering of animals, as involved in an intellectual and moral system, is one neither of justice nor injustice. Justice does not pertain to animal life. Animal life is simply a subject for beneficence. Animal suffering must be conceded as certainly for man's well-being as human suffering. One may drive his horse, though the horse prefer the pasture; nor can the horse be called into council as to what constitutes reasonable driving. This question is settled in the higher sphere of sympathetic human impulses. The higher involves and limits the lower, not the lower the higher. With sensitive and morbid imagination we cast a moral personality about brutes, and then proceed to reason from it as if it were a fact. Ani-

mals have no duties, and hence no inherent rights, and no claims of justice to cast over those rights. Their appeal is to mercy, and mercy has its seat in the spirit of man. With the cleansing of that spirit it will flow forth in pleasant streams. What is to-day most trying in the sufferings of animals, is the gratuitous pain inflicted on them by man against both his lower wants and higher nature. A scientist that indulges himself in vivisection may still be quick with his objection to divine mercy.

(3) Suffering is involved in happiness. Pain is in part at least the foil of pleasure. Weariness it is that makes rest so sweet. The slight discomfort defines the limits of comfort. Even severe pain restores to enjoyments their just estimate. The lapse from intense pleasure into ennui teaches us the lessons of moderation and inner composure. Pleasure and pain are interwoven for pleasure's sake, and cannot be torn asunder without a destruction of the web of our lives.

(4) Suffering is included in intellectual growth. We have said that pains are points on the indicator by which the condition of our physical powers is disclosed to us, and the form and limits of our intellectual activity are assigned us. Without these disclosures the intellect, unable to reach the facts, would have no terms of judgment, no diagnosis. Sagacity lies in dealing quickly and skilfully with these terms of pain and pleasure; and wisdom lies in a comprehensive statement and solution of the entire problem involved. The intellectual problem gets pungency and pressure from these very motives. Without them it is a dead record.

(5) Suffering is, above all, incident to righteousness. Righteousness is a soul guided amid these angry and assailing waves by an angel of wisdom and mercy at the helm. This is the only spectacle which makes life noble, and its conditions are the urgent and multitudinous, the ephemeral and the eternal, pains and pleasures which come thronging up, on every hand, to take possession of the world. We must be allowed a little impatience at this hasty censure of suffering by which, as a great constructive energy, the intellects and hearts of men are nerved in the struggle for life, in its enlarging and upward tendency.

The sufferings of animals are to be regarded as a secondary term involved in the primary term, man's moral discipline, and so ultimately in the largest aggregate of well-being. It is also to be borne most distinctly in mind, that the sufferings of men are far more varied, intense and protracted than those of animals; are, in much the larger part of them, the results of their own transgression and disciplinary under it, or are inflicted by others in the mere wantonness of cruelty. The diseases of men are innumerable, those of animals comparatively few; but these diseases are the accumulated product of ignorance, indolence, and vice. By far the most extended and pitiful sufferings in the world have been deliberately put upon man by man, as those of war, famine, pestilence, imprisonment, torture, penance, and the endless irritations of unkindness. If men, for the next hundred years, were to strive faithfully to remove all suffer-

ing, nine-tenths of it would disappear. If the effort were to continue the second hundred years, with the added intelligence incident to progress, nine-tenths of the remainder might, under direct effort and the laws of inheritance, be overcome. At the close of a thousand years of such exertion, the remnant of evil would be very insignificant, the amount of pleasure exceedingly great.

Under the moral outlook, then, men have no right to complain of the discipline to which they are subjected, when they remember (1) that unspeakably the worst portion of the pain of the world is of their own direct infliction; (2) that much the larger share of the pain of the world follows on after their own heedlessness and vice; and (3) that the world is a mild and merciful place, when the sanguine, remorseless and peevish temper of man is contemplated. It is at least doubtful whether its harsh features could be softened without injury to this untractable pupil. What the world waits for is spiritual renovation, and this means that man in mercy is to put away the pain in which he has hourly revelled. The physical features of the world are far softer than the moral ones. To mitigate the former still more, in advance of the latter, would be to reduce the light that now falls on the spiritual and unspiritual action. He who would sentimentally escape suffering, can easily forget the uneradicable relation between purity and peace.

The pessimist may say, "Scarcely is a happy life worth living, and few, indeed, find that life;" none

the less the pressure is not too great for the grand movement that issues from it. On no other terms would this glacier flow. The simple question still remains: Is man to slide backward into animal comforts or to be pressed onward into spiritual life? What the pessimist should deny is that pure affections are the normal and attainable good of rational life; or, that, if attained, they are possessed of any preëminent worth. The negationist must face the light, and with unflinching eye charge it home as another phase of illusion and darkness.

§ 4. A second objection to the structure of the world is the law of descent, more especially in its relation to man. A portion of its results bear on their face the most disastrous appearance. The child, by physical and moral inheritance, takes up the terrible burden of a father's vices at their passage over into retribution, and either with wholly disproportionate strength staggers a little way under it, or, bearing it more sturdily, enlarges it for the next heir. Here lie, in truth, the depths of the moral kingdom, the hell below the deepest hell, and from this point all upward measurements are taken.

But the law of descent is fundamentally constructive in the social and moral world. To it are attached our chief duties; by it we make our greatest gains; into it are woven our warmest affections. When the kingdom of righteousness shall begin to prevail, it will be seen to roll on in the grooves of this law, and to hold its safe movement by their support and guidance. If this law is the sinister

hand of evil, it is also the dexterous hand of virtue.

Nor is there even among the vicious any such deterrent to vice as this very law of descent. The last tie to be broken is that which binds our actions to the fortunes of a child. And the child itself, who endures this hard part of the law, we may not hastily judge. We have not the complete range of its fortunes. If motives press downward with great weight, they beget by this very fact at least some reaction upward. The moral consequences are always in the moral problem and flow out of it. As is the condition so are the responsibilities. The highest positions have their supreme dangers, and the lowest their profound compensations. If the fortunes of a parent betray a son, his misfortunes sometimes save a son. Our judgments are largely eye-judgments, and do not fathom the subject.

But abating not the evil, the inquiry still remains: Shall sin be defended from its evils, and rid of its own entail? What is it that shall avail against sin, fittingly expose it, and rebuke it, but its own fearful consequences? Is sin to be repressed like an infectious disease by a quarantine? In fact, is any such quarantine possible? The moral life lies between man and man, father and son. There it is generated; there it discloses its character; there its results follow on. If virtue is to have its own, vice must have its own also. Men who are constantly making and magnifying eternal and unchangeable laws, have, after all, but a feeble idea of their scope. The supernatural, the divine truths, and the Divine Spirit, at work regeneratively under physical and moral

law, are rejected by them because of this very sternness of order It would sometimes seem as if the mind delighted in its own difficulties; it propounds them on such opposite and conflicting grounds. The one inexpugnable thing in the moral problem are the fruits respectively of virtue and vice.

A third objection to God's benevolence is found in the carnivora. "The law of merciless and incessant destruction" involved in the relations of animal life is obviously exposed to objection. Knowledge, however, rapidly softens the difficulty. The amount, variety and freshness of animal life on the globe is incomparably greater than it otherwise could be, by reason of this law. In the same degree, therefore, is the aggregate of animal pleasure increased. It may well be doubted, on the other hand, whether the balance of pains would be favorably altered by substituting slow decay for a violent death. The sufferings incident to this method have a higher apparent than real amount. The quick stroke of death is appalling to human senses and imagination, but doubtless in itself is frequently a painless transition. The carnivora are skilful workmen, and strike hard at a nervous centre. Dr. Livingstone found that the stroke of the lion was wellnigh painless. Setting aside sentiment, it may be doubted whether life can be extinguished with less loss in any other way, while the gains of the method to active life are very great. We must remember that the death of an animal has not much significance save as a physical fact. It is preceded by very little apprehension; it is quickly over; the excitement

of the struggle obscures the pain; the triumphant strength of the victor offsets the defeat of the victim. The whole transaction proceeds on a plane of greatly reduced sensibilities.

Moreover, this is a fact which exactly expresses the moral temper of the world. Men, like animals, prey on each other. The moral type should be sustained by its physical surroundings. A world greatly better than man, and still subject to his cruel impulses, would be a far more startling and unendurable fact—one that would torture every tender sensibility. The domestic animals are those most to be pitied. They suffer far more from injury at the hands of man than do wild animals from each other. As moral renovation advances, both forms of suffering will be narrowed. Man will temper his own action with mercy, and the higher carnivora will disappear.

A fourth point at which nature seems to proceed in negligence of pain is in nourishing parasites. This objection does not hold in the lower forms of life, as no suffering is involved in it; it does not attain any very considerable force till we reach man. He is said to be infested with a score or more of parasites. Preëminently in man—and the assertion is also measurably true in domestic animals—parasitic life attends on physical conditions of neglect and reduction, and is virtually a punishment of ignorance, indolence, and vice. A pure and well-sustained life has ordinarily but little to fear from parasites, and the most subtle of these dangers impose on us a more intelligent regard of the laws of clean-

liness and good husbandry. Parasites enforce upon us thorough attention to all the concomitants of refined life. Squalor, dirt, miasma, in their obtrusive and concealed forms, measure this peril. Its presence, therefore, impels us upward, and is left behind at each step of progress. It is a tsetse fly driving us into a better spiritual habitat.

The moral type also still includes the parasite, and may well find its present expression in the world about us. Sin is a parasite, the most fatal and revolting. The language of coercion and censure requires images of no less vivid and loathsome import than those furnished by leprosy or a cancer. Moral congruity determines the organic integrity of the world.

The goodness of God remains like the day struggling with the night. The dark mind may forebode defeat. The issue is to be made out dynamically. We must understand the circuit of the sun and the strength of its ascension.

CHAPTER IX.

IMMORTALITY.

§ 1. The central truths in Natural Theology are the being and attributes of God. A truth, which immediately follows from these truths, and greatly enlarges their scope, is that of immortality. The order of belief is our own spiritual constitution, the being of God, immortality. We discuss immortality in connection with Natural Theology because it is so immediately dependent on the attributes of God, and because these attributes assume such new importance for us by virtue of immortality. The range of the present life is so narrow that it gives no sufficient field for the grand incentives of religion. Very moderate powers receive, in the assertion of immortality, an unmeasured coefficient, and so become of great magnitude. Every relation is altered by it, and life in its new dimensions takes up new motives. To acquire a language is an effort of little worth if there be no wealth of literature in it; to learn the moral and spiritual speech of the world is a comparatively fruitless task if there is no Kingdom of Heaven, no land of which this is the native tongue.

We do not argue immortality from our physical constitution. On the other hand, this in itself and in its affinities is strictly mortal, giving no promise beyond the present. Under a strict philosophy of evolution, with our first terms physical, we should grant our last terms to be physical also, and waive every thought of immortality. Nor can we any more shape a rational expectation of future life from anything which we are pleased to term the essence of the human soul. Our ignorance here is too profound to give our thought any footing. Even the penetrative mind of Bishop Butler makes nothing out of the proof. We infer immortality from our rational constitution, taken with the character of God. The argument, then, turns upon our philosophy and our religion, and is of the same supersensual character Immortality lies in its promises as wholly beyond physical science as it does in itself. We do not expect our later conclusions to be any stronger than our earlier ones. If there is no spirit in man, if it is not the inspiration of the Almighty that giveth man understanding, then assuredly he will perish like the flowers, and no beauty will be any protection to him. If we were empiricists, we should yield the point at once. The argument rests on the two abutments of man's spiritual constitution and God's spiritual government. These giving way, the structure sinks with them.

Negatively, however, science has nothing of any moment to say against immortality. It finds, it is true, no proof for it in its own field; but from the very nature of the case it should not. Its testimony

is simply assertions made concerning one place in reference to what is alleged to have occurred in another place. Nor is there any rational presumption against immortality, save to those who make human experience a test of all possibilities. Its conditions, indeed, are inconceivable, but the reason of this is obvious. A life unlike our present life has no common terms in experience with it, and hence is inconceivable. We can do very little in working out events on the surface of Jupiter. The mystery of that future life, when it shall become a fact, will not be greater than that of this life. Existence then will be somewhat less strange than existence now, for it will have an explanatory term back of it, which this life lacks. There is no presumption against immortal life which can stand in the presence of large and sober reason and maintain itself. There are, indeed, many shadowy impressions arising from the vagueness and strangeness of its conditions; many tyrannical feelings incident to a life planted in the senses; but these are in their own nature ephemeral, are the appertainings of a transient experience, and may not masquerade in the presence of great interests and eternal moral principles.

§ 2. The first support for the doctrine of immortality is found in our spiritual constitution. Manifestly if we could clearly read this constitution, we should see at once in it either the presence or the absence of the conditions of future life. This argument, resting on rational powers, as powers of a peculiar order, extends no lower than man in the animate creation.

(1) The life of man, when it is brought to an end in death, is manifestly not exhausted in its intellectual and spiritual resources. The life of the animal is so rounded in by physical conditions as to wax and wane with them. Man's higher powers, on the other hand, are capable of indefinite growth. The physical limitations put upon them may sometimes obscure, but do not hide, this fact. The present life is exceedingly limited and insufficient as tested by this end of growth. Its experiences increase in value at every step; its earlier are for its later ones, and its later ones have in them the same law of development. These faculties of man are profoundly fitted for a further unfolding, and so indicate an intellectual purpose and raise a moral demand in reference to it. Here are germs to which a future life is a correlative opportunity of development. The spiritual unrest of man is a fruit of the range of unsatisfied powers. He will not, in his hopes and aims, readily settle down into the narrow circuit of his physical life; and so far as he does this, he is injured by the concession. All his lifting forces look toward immortality; an irrepressible migratory impulse is in him, the product of his combined powers.

The case, therefore, may be put more strongly. In spite of physical decay it is often manifest that life closes at a maximum of spiritual energy. Even the narrowing down of activity is, in part, due to more sober and proportionate impulses, and, in part, also due to the coming forward of a fresh generation, who only take up hesitatingly the wisdom and the

ways of the previous one. Thus, as Ranke says: "In every great life there comes a moment when the soul feels that it no longer lives in the present world and draws back from it." This feeling does not arise from the decay of life, but from its weariness with conditions which are too slow for it, and which, in their exciting form, it has relatively exhausted. The sedate old man is far better fitted for life on its spiritual side than the impulsive young man. The conditions both of wise thought and balanced peaceful pleasure are with him. Quicker and more refined tastes and sensibilities, and more profound and generous affections are his. He lacks no promise of larger being save only the physical one. All forces have wrought in him a more perfect spiritual equilibrium. Shall these physical accidents hem in the spirit, and finally strangle it, like a tie too tightly drawn in one's own garments? No philosophy can think so, save one that in the grand election has given supremacy to matter rather than to mind, and so made thought the pitiful thrall of things.

(2) The whole object of evolution, the consummated labor of life, will be lost without immortality. Nothing can be rationally worse or morally more unsound than a purposeless movement or insufficient issue. It brings to the mind the weariness of fruitless labor, and to the moral sentiment the discouragement of broken relations. None of us are willing to take the present as the last term in evolution. None of us find in it such fulness as to explain all that has gone before, or any arrest of the forces

which have reached this very moment of our lives. The empiricist strives to save evolution, while letting slip the individual by granting a kind of immortality to the race. The effort is not merely vain, it has precisely the opposite moral effect from that intended. The race is made up of individuals, and its fortunes cannot be separated from their fortunes. If each withers away prematurely with unripe fruits, the breadth of the race only broadens the misfortune. Not one plant simply, but the whole garden is bitten by frost. The race can not improve save as individual life becomes more hopeful, more masterful; and this life can not find the needed spiritual incentives in the pallid light of the tomb, nor maintain the springy step of progress under the unalleviated burdens of the body. Or if it could do this, the argument for immortality would gain ground at every stage of growth. The moral censure of hiding this grand life in the grave would become unendurable. If the rational fruits of the world are to be ripened they must be ripened in another life. Such a life is the out-door garden of this our conservatory. Who, either in his thought or feeling, can say there is no other air, no higher heavens, in which these plants can blossom; nothing save this stifled air and this glass within reach of my hand! Nor is the protest less profoundly rational, less deeply based in our constitution, because it is deeply emotional.

(3) The moral law is an unsuitable law for the guidance of a simply mortal life. It is one of self-sacrifice, it is one of protracted struggle, one of constant concession of pleasure to duty, of the present

to the future. It maintains this character to the very end of life and generation after generation. Now, if there is no future life, such a law is out of sorts. It has a range too broad for the facts marshaled by it. It is full of high-sounding, yet empty words. It is ever holding up ideals that cannot be attained. Man is thus led on to wearisome and disappointing effort by promises made to his highest and most sensitive nature. Moral fitness is most of all wanting in morality itself.

Irrational life under its law of appetite and instinct is fit, proportionate, fortunate; rational life under its law of duty, perplexed, restless, even disastrous and diabolical. No man can well accept the moral law as one of spiritual insight, and not feel at once that the years of eternity must be given to it in which to clear itself; that a long day of fulfilment and peace is to follow and level up the end with the beginning. Men are now called on by this law of duty to stand on the verge of time, to cast all things behind them, and in the faith of implicit obedience to fling themselves on the open-handed future. If this future drops them into oblivion, what then? They have played the part, on the highest stage of the world, of a moral maniac.

The empiricist, while greatly cutting down the moral nature, tries to get depth enough to float his razeed craft, by claiming an immortality for the race. This makes the matter worse rather. An infinite number of restless, unfortunate, and half-fortunate creatures cannot outweigh a single perfect man. It may be thought that this argument im-

plies that a moral life is an undesirable and unhappy life, and must needs have compensations and payments. Not so; it simply implies that the first stages of development are difficult stages, and that if they lead to nothing, they are of little worth by themselves. Foundations may not pay for the laying if they are not to be built upon. Moreover, the moral law, as it now lies in men's faith, casts the light of a great promise over these first labors, and so transforms them. The light fades out of the sky if there is no immortality.

(4) Those who most staunchly hold fast to immortality, do it by virtue of the force of their spiritual powers. It is easy to ridicule this argument, as if it involved the assertion that the existence of a belief and the strength of a belief prove its truth. The universality and force of a belief do imply some occasion for it. Beliefs are facts, are effects, and have causes. The only proof we have of any truth is, in ultimate analysis, this same universality and pertinacity of conviction. Putting the case in the forms of scientific thought, we may say that any general impulse in any form of life implies an exterior correlative term. Natural selection is potent enough to abolish mere worry. Thus instinct is a correspondence between organic incentives and exterior conditions. If the lemmings of Norway at times congregate in great numbers, and, moving off in a straight line, perish in the North Sea, the naturalist does not rest satisfied with this self-destruction as a final fact. He regards it as an expression of a general migratory habit formed

under other conditions, and in that instance miscarrying through a change of circumstances. The impulse toward immortality, and the impulse in turn received from it, are very general in our race. Why are they operative with such extended and permanent force if they have no correlation? Animals are not extendedly harassed by ideas reaching into a realm of illusion.

But this impulse in men exists in its strongest, clearest form as they enlarge their spiritual powers, and in turn expands and nourishes those powers. If science, then, will not allow in its explanations the incongruity of organs that have no functions, or instincts that render no service, why should reason accept the greater incongruity of a spiritual impulse, more deeply rooted as the mind unfolds itself, that plays no part in the spiritual economy, that has no basis in the world of facts? A general conviction has a ground, and a conviction that advances with our rational powers has a ground allied with those constitutional forces. A belief, then, in immortality, as an action and reaction in our spiritual growth, indicates a correlation of the highest order.

(5) A kindred argument is found in the reasons which now lead gifted and good men to reject the belief. They do it with more or less reluctance, and are driven to it by a one-sided philosophy. It is the fruit of empiricism, and has no more significancy than the philosophy of which it forms a part. It is simply an overflow of the habitable world by the uninhabitable sea—of the spiritual by

the physical—and will last no longer than while the tide is in.

(6) This leads us to our last argument under this head, and one which, in a measure, includes all the others. Immortality is the third word in the vocabulary of belief; spirit, God, immortality. A spirit, an Infinite Spirit, an eternal fellowship of spirits,—this is the rational relation of ideas. A belief in immortality is the second highest expression of faith, and faith is the force of our spiritual life. The present argument, then, is, that this doctrine is embraced as a most pregnant term in that supreme action of mind and heart which we designate as faith. If the human spirit has power, if it enters any new and higher regions of life, it must do it by virtue of a subtle, upward tendency of its own,—by virtue of impulses and affinities native to its constitution. To trust these incentives, to obey them—this is inspiration; to fear them, to discredit them, to disparage them—this is the inertia of a grosser being. That the best thing is the truest thing, as certainly as the truest thing is the best thing, is an affirmation that mind makes to itself in recognition of its own integrity, and heart makes to heart in their common purity. When the world is surveyed from the widest outlook, and faith, the sharpest sense of all, catches the most secret voice of facts, then it is that these two truths of spiritual being gather force.

Faith can never put its full proofs into words, any more than colors can be fittingly described; and the words that it does utter wait on the interpretation

of kindred experiences. To these affirmations of the soul within itself, to itself and to others, science has little to offer, and nothing properly to oppose. It stands by as an indifferent person, when a friend is praised. Its wisdom is to keep silence, and the smile of incredulity only betrays its cynical heart. The terms of physical science, far from being exhaustive terms, are only primary ones in the realm of mind, and mind is more true to itself at the points at which it transcends them, than at those at which it is measured by them. The whole controversy, indeed, lies just here. Is mind a numerical statement, a complex equation, of the weights and measures of the senses, or does it rise above them into a region of comprehension, by its full spiritual stature? Because a spiritual philosophy culminates in this faith in immortality, and wraps about the belief a most lively tissue of thought and feeling, as the mantle of the mollusk envelops the shell it is depositing, or as the tree covers in the obscure buds of the coming season, do we believe that this doctrine stands justified in the kinship of forces, as the uppermost point of growth—growth ever antecedently obscure, and only fully expounded in its accomplishment.

§ 3. By this relation of immortality to faith, to a rational confidence in the coherent structure and upward stretch of things, we reach a second series of proofs, springing from the character of God.

(1) We believe that the plan of God requires this completion of immortality. The present confusion and discord of the world in its moral facts are very

plain. If there is any coherent result to be reached by these events, evidently some ulterior object is sought after by them. That the full scope of a divine purpose can be secured on the present plane of man's action, by itself and for itself, is even less probable than the same assertion would have been, if made concerning the earliest forms of animal life. If the hold which immortality has upon the mind, is, as we have indicated, a prophetic foreshadowing of the forces which work for its coming, not less does rational evolution call for the transition involved in immortality. Immortality can plainly bring new light, new breadth, new fitness, to these cramped and distorted moral facts. Accepting with thorough conviction the past as a rational unfolding, we are carried at once onward to the fitness of a like and yet larger progress—a progress here in its own line, and a later progress which harvests home this growth.

(2) The truthfulness of God, the imperturbable support of faith, calls for immortality. The wise and kind parent is careful not to allow any deep, earnest desire, any pregnant hope, to be awakened in the mind of the child, which cannot find fulfilment. The sober and earnest thoughts of men are the natural products of their constitution. If these, even in their most fruitful forms, must pass away as illusions, the whole moral nature suffers a taint of falsehood. Spiritual truth, truth to one's better impulses, becomes of far less significance in the world than intellectual truth; and the truth-loving temper of God suffers reproach. It does not, to the dis-

criminating mind, follow that because men may dream idly, that therefore all their hopes should be pronounced idle. Nay, the folly of foolish dreams requires the foil of profound hope to disclose their character. If all beyond the coarse facts of the senses is mere vapor, banded with color according to the light that chances to fall upon it, then these facts themselves have no translation but that of the senses, and we live by sight simply.

(3) The love of God toward man leads us to the same conclusion. Man seems spiritually capable of future life; he covets it; he shapes his action in reference to it; he is lifted by this hope; he is restrained from evil and united to virtue. What other result can divine love grant, then, save this of immortality? The love of God for man would lose all high quality, would be like that which we have for the flowers of a single season, if the years are to sweep him quickly away, and that, too, before he has reached his flowering.

(4) Nor can man on these terms be properly called into any communion with God. We must ever stand as passing strangers about the threshold of the temple, or in its outer courts. Communion implies reciprocal love that holds fast its objects in an ever firmer embrace. The love of God is rehearsed for us in every pure household. It is a love that yields to no outside pressure, that frames over and over again its inside bands with constant enlargement and renewed strength. That God, having embraced man in this fellowship of love, should

relax his hold is a moral contradiction. Having begun such a work as this, he must needs carry it on to perfection. Having commenced a discipline, he will not arrest it; having drawn forth love, he will not fling it away; having bestowed love, he will not withdraw it. The pledge of the Divine Nature in his full spiritual force is set as a seal to the immortality of the good. That "where I am there ye may be also."

(5) The argument gains force from the contrast of the opposite statement. Death must remain the most melancholy fact conceivable in its spiritual bearings, if no life follows after it. A sort of stupidity and intoxication, a steadfast shutting of the eyes, are our only defence against it. We are to remember that our proof now proceeds on the assertion of a God infinite in power, perfect in wisdom and love. We can reach no hopeful conclusion on any other premises. Men lose immortality because they first lose God. The light, dying out at the centre, is lost at the circumference. A universe spiritually dead, no matter how large it is in itself, is of the nature of a tomb. So men say: "God is dead, hope is dead, let us die also."

But the spiritual features of death are no more softened by this despairing philosophy than are its physical aspects. The two are the same. There is no pallor like the pallor of the grave, no knell like the knell of the tomb, when affection buries its dead. Nor is this mere sentiment—simple weakness. If the eye may covet light, if the ear may long for music, the mind may claim prolonged communion with

truth. The heart may yearn to retain its inheritance of love. No facts are settled deeper in our rational constitution. Nor has our empirical philosophy any truly explanatory or consolatory words to offer at the very end. All it has to say is like pelting hail, fitted to lead us to wrap ourselves more closely in the cold proprieties of life, but not fitted to impart any new warmth, or to descend, like gentle rain, to the seeds hidden in a fruitful soil. Death stands as a victor over life; light ends in darkness; and the shadows of vanished pleasures only swell the sad retinue whose voice is a dirge. Whatever we may seem to make of the world under the divine wisdom in it, the fact of death still fills it with fear and silence; for every spirit that has tasted life must take its solitary way back again to the regions of night. One word alters all, explains all, illuminates all, and that word is immortality. So true is this that it is impossible to hold the one conception without the other; to believe in God and not to believe in his chief gift, the condition of all his gifts. Life and immortality are the first things brought to light in any grand incarnation of spiritual truth.

THE END.

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